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AD849172



AD

RDT&E PROJECT NO.

(16) USATEC/M-PROJECT NO. 7-8-0961-01

175096171

INITIAL PRODUCTION TEST OF  
PUMP, CENTRIFUGAL, 600-GPM.

FINAL LETTER REPORT.

59

11 Mar 69

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DEPARTMENT OF THE ARMY  
HEADQUARTERS, U. S. ARMY TEST AND EVALUATION COMMAND  
ABERDEEN PROVING GROUND, MARYLAND 21005

AMSTE-GE

14 MAR 1969

SUBJECT: Final Report of Initial Production Test of Pump, Centrifugal,  
600-GPM, USATECOM Project No. 7-8-0961-01

Commanding General  
U. S. Army Mobility Equipment Command  
ATTN: AMSME-QRT  
4300 Goodfellow Boulevard  
St. Louis, Missouri 63120

1. Reference letter, STEGE-SS-T, USAGETA, 16 October 1968, subject:  
"Interim Letter Report, Initial Production (Specification Requirements)  
Test of Pump, Centrifugal, 600-GPM, GED, 4-Inch, Wheel-  
Mounted, USATECOM Project No. 7-8-0961-01."
2. Subject report is furnished for information and necessary action. (Incl 1)
3. The test item is a centrifugal, single-stage, integral self-priming water pump. The item is wheel-mounted, provided with a military standard gasoline engine, and has a rated capacity of 600 GPM. The initial production test was conducted by U. S. Army General Equipment Test Activity at Fort Lee, Va., and Fort Story, Va., during the period 21 August 1968 through 20 January 1969. The results of the tests to determine conformance to the initial production requirements of the specification were reported by referenced letter report. Inclosure 1 reports the results of all tests conducted by USATECOM on the 600-GPM pump.
4. Results of the initial production test are as follows:
  - a. The item failed to meet applicable tests of the specification in the following respects.

(1)

4 3

AMSTE-GE

14 MAR 1969

SUBJECT: Final Report of Initial Production Test of Pum, Centrifugal,  
600-GPM, USATECOM Project No. 7-8-0961-01

(1) Change 1 to the TM 5-2805-204-14 which is applicable to the Model 4-A084-III standard military engine of the test item was not furnished with the equipment. It is essential that the engine technical manual incorporating Change 1 be issued with the equipment. No evaluation of the manual is required since this is a standard technical manual.

(2) During the fuel tank pressure test with an internal tank pressure of not less than 5 psi and the top of the tank immersed 12 inches below the surface of the water, no evidence of leakage from the tank was noted. However, minimal fuel vapor leakage from the engine fuel tank vent valve was noted. No corrective action is required since the military specification was met in that the fuel tank did not leak during the test under the test conditions as outlined in the military specification.

(3) Two electrical tachometer failures occurred during the test. The tachometer on test item H-2283 was found to be inoperative when the test was initiated. The tachometer on test item H-2283 failed after 230 hours of test operation. The use of a mechanical rather than electrical tachometer should be investigated. This problem is classified as a shortcoming, as outlined in Appendix I of subject report.

b. One deficiency was reported during the operational test. The maintenance instructions for wiring are not compatible with the actual wiring of the control panel. The condition has been downgraded by this headquarters to a shortcoming, since the wiring harness is not complex and is color coded. These factors minimize the chance of maintenance error in trouble shooting by qualified personnel, even though some difficulty may be encountered. However, it is highly desirable that the wiring diagram discrepancy be corrected to improve maintainability of the item.

c. Ten other shortcomings were reported in Appendix I, subject report. Considering the deficiency regraded as a shortcoming as stated in paragraph 4b above, there are a total of eleven shortcomings remaining.

d. The test item demonstrated a reliability of 90 per cent at a confidence level of .90 (Appendix III-B of subject report).

14 MAR 1968

AMSTE-GE

SUBJECT: Final Report of Initial Production Test of Pump, Centrifugal,  
600-GPM, USATECOM Project No. 7-8-0961-01

5. The pump was adequately maintainable. Exceptions were the discrepancy in the wiring diagram, paragraph 4b above, and the lack of maintenance instructions, as relate to flushing and inspection of the intermediate housing when abrasive liquids are pumped.

6. It is concluded that:

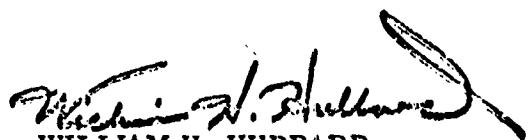
The pump, centrifugal, 600-GPM is suitable for issue; ~~as indicated~~

The item is adequately maintainable and reliable.

7. It is recommended that:

- a. As many as possible of the shortcomings be corrected.
- b. The maintenance and overhaul manual incorporate suggested changes, as indicated in Appendix IV of subject report.
- c. Change 1 to TM 5-2805-204-14, which is applicable to the Model 4-A084-III standard military engine, be issued with the subject item.

FOR THE COMMANDER:



WILLIAM H. HUBBARD  
Colonel, GS  
Deputy Chief of Staff

1 Incl  
Final Rept (1 cy)



**DEPARTMENT OF THE ARMY  
U.S. ARMY GENERAL EQUIPMENT TEST ACTIVITY  
FORT LEE, VIRGINIA 23801**

STEGE-TE-S

14 February 1969

**SUBJECT: Final Letter Report of Initial Production Test of Pump,  
Centrifugal, 600-GPM, USATECOM Project No. 7-8-0961-01**

**Commanding General  
U. S. Army Test and Evaluation Command  
ATTN: AMSTE-GE  
Aberdeen Proving Ground, Maryland 21005**

**1. References are as follows:**

- a. STE Form 1028, AMSTE-GE, U. S. Army Test and Evaluation Command, 29 January 1968, subject: "Test Directive for Initial Production Test of Pump, Centrifugal, 600-GPM, USATECOM Project No. 7-8-0961-01."
- b. Letter, AMSTE-GE, USATECOM, 4 December 1967, subject: "Planning Directive for Initial Production Test of Pump, Centrifugal, 600-GPM-USATECOM Project No. 7-8-0961-01."
- c. Military Specification MIL-P-52474 (MO), 3 August 1966, subject: "Pump, Centrifugal, Water, Gasoline-Engine-Driven, 4-inch, 600-GPM at 50-Feet Total Head."
- d. Test Plan, U. S. Army General Equipment Test Activity, dated March 1968, subject: "IPT of Pump, Centrifugal, 600-GPM, Water, GED, 4-Inch, Wheel-Mounted, USATECOM Project No. 7-8-0961-01," with Change 1, dated 12 November 1968.
- e. MIL-STD-209B, "Slinging Eyes and Attachments for Lifting and Tying Down Heavy Military Equipment," unclassified, 11 May 1960; Notice 1, 12 June 1963.

STEGE-TE-S

14 February 1969

SUBJECT: Final Letter Report of Initial Production Test of Pump, Centrifugal, 600-GPM, USATECOM Project No. 7-8-0961-01

f. Letter, STEGE-ET-L, this headquarters, 15 October 1968, subject: "Interim Letter Report, Initial Production (Specification Requirements) Test of Pump, Centrifugal, 600-GPM, Water, GED, 4-Inch, Wheel-Mounted, USATECOM Project No. 7-8-0961-01."

2. IP test of the 600-GPM Water Pump was conducted at Fort Lee and Fort Story, Virginia, during the period 21 August 1968 through 20 January 1969. Plan of test (Ref. d) as changed was followed with no deviations. A total of 750 operational hours were compiled on two test items, 188 of which were accomplished during salt water applications.

3. The test item is considered adequate to meet the specification requirements of Specification MIL-P-52474 (MO) (Ref. c) except as follows:

a. The engine manual furnished with the pumping unit, TM 5-2805-204-14, is not applicable to the Model 4-A084-III standard military engine.

b. The engine fuel tank cap is not suitable to prevent leakage through the vent when the latter is in the closed position (Par. 5e(2), Ref. f).

c. The inoperative tachometer (EPR's No. L7-1, L7-3, and SPECIAL, App. IV) is considered to be directly related to poor quality control inspection procedures at the contractor's plant. See Reference f for detailed findings.

4. The pump performed mission tasks to an acceptable degree. Safe use and handling characteristics were confirmed, and human factors aspects were adequate.

5. The test item was transported by truck over highways and cross-country and by railcar without difficulty; however, the tiedown eyes do not conform to MIL-STD-209B (Ref. e). The tiedown eyes suffered weld fractures and severe bending during the rail impact test. (App. II).

6. The test item met reliability requirements (App. III-A and B) as specified in the test plan (Ref. d). Maintainability of the test item (App. I and III - C, D, and E) is not considered adequate until incorrect wiring instructions in the operation maintenance and overhaul manual are corrected (deficiency, EPR L7-14, App. IV). The malfunction of the pump seal

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SUBJECT: Final Letter Report of Initial Production Test of Pump, Centrifugal, 600-GPM, USATECOM Project No. 7-8-0961-01

(EPR L7-11, App. IV) is attributed to pumping abrasive liquids. Additional preventive maintenance instructions requiring flushing and inspection of intermediate housing when pumping abrasive liquids will prolong seal life and enable early detection of seal wearout. Liquids to be pumped should be filtered or settled to the maximum practical extent to prevent abrasion of pump impellers, shafts, and seals (EPR L7-15, App. IV).

*Howard W. Hembree*  
HOWARD W. HEMBREE, Ph.D.  
Technical Director

*C R Church*  
C. R. CHURCH  
Colonel, QMC  
Commanding

4 Incl

Appendix I - Deficiencies and Shortcomings

Appendix II - Transportability

Appendix III - Maintenance Evaluation

Appendix IV - EPR's

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APPENDIX I. DEFICIENCIES AND SHORTCOMINGS

<u>Deficiency</u>	<u>Suggested Corrective Action</u>	<u>Remarks</u>
1.1 Maintenance instructions for wiring the control panel are inaccurate.	Assemble the control panel wiring in accordance with the maintenance instructions or change the maintenance instructions to correspond to the test item.	EPR L7-14.
2.1 Malfunction of two tachometers.	Convert to mechanical tachometers.	EPR L7-1 EPR L7-3.
2.2 The crankcase breather assembly is not accessible for removal with tools found in the general mechanics tool set (PSN 5180-754-064) when the engine is hot.	Redesign of the breather assembly to permit removal with a socket wrench on top.	EPR L7-2.
2.3 Malunction of choke solenoid #13206-E0809.	Remove electrical type choke and use the hand choke only; or change to a thermostatic type choke commonly used in automobiles.	EPR L7-4.
2.4 Loss of anchor lock pin.	Use a standard split key ring in place of the ring furnished with the test item.	EPR L7-5. The furnished rings had their openings closed only with friction tape, which deteriorated with time and use.

**APPENDIX I**

<u>Shortcoming</u>	<u>Suggested Corrective Action</u>	<u>Remarks</u>
2.5 During the rail car hump test, the 4 tiedown eyes bent 5 of the 8 welds securing the eyes to the pump frame fractured.	Increase diameter of the 1/2" bar tiedown eyes and weld bars to frame on both sides of frame channel flange.	EPR L7-6.
2.6 Temporary malfunction of the electrical system was caused by the tachometer wire being pinched between the top cover and lower shroud of the engine.	Provide an opening in the lower engine shroud to permit the wire leading to the tachometer sending unit to pass through without being pinched by the engine cover.	EPR L7-7. EPR referenced only the tachometer; actually, entire electrical system was affected momentarily.
2.7 Malfunction of the magneto serial #5805606; center carbon worn out, contact point set plate (82J96 224J7H) loose.	Improve quality control of magneto assembly by the manufacturer.	EPR L7-8. Reclassified from a deficiency to a shortcoming because reliability of magneto was verified after extending test hours from 438 to 750 hours.
2.8 Malfunction of the engine starter motor.	Additional protection for salt water pumping operations should be provided for the starter motor.	EPR L7-9 EPR L7-9s.
2.9 Premature wearout of the pump seal (A004-M36).	I-2 Additional preventive maintenance instructions requiring flushing and inspection of intermediate housing when pumping abrasive liquids will prolong seal life and enable early detection of seal wearout.	EPR L7-11. Reclassified from a deficiency to a shortcoming because of additional analysis. Failure of pump seal caused damage to following items: 1. A010-M36 gasket. 2. A907-M36 shim set. 3. A009-M36 plate seal 4. A003-M36 sleeve shaft. 5. A100-M36 inter. assembly.

**APPENDIX I**

<u>Shortcoming</u>	<u>Suggested Corrective Action</u>	<u>Remarks</u>
2.10 Prior to operation, the priming Plug A-909-M36 was broken during removal to prime the Pump. The entire wrench area of the Plug twisted off, leaving an opening into the pump housing.	Use the same material in the Plug and casing.	EPR L7-13.
	6. FSN 2920-882-3401 motor starter. 7. 97403-13213E3286 solenoid starter motor.	

## APPENDIX II. TRANSPORTABILITY

### 1. Highway

a. The pump, packaged in a wooden crate, was shipped by commercial truck to Fort Lee, Virginia, a distance of 690 miles, with no damage resulting.

b. At Fort Lee, the uncrated, wheel-mounted pump was located onto a truck, cargo, 2 1/2-ton, 6x6, M35, for highway testing (Fig. 1). A standard commercial 2-ton forklift was used for the loading. The test item was also lifted with a 5-ton wrecker, M62, in order to test the lifting eye. The truck-mounted pump was then blocked and tied down as shown in Figure 2. No difficulty was encountered in loading the pump unit aboard the M35 truck by three men and a forklift in 10 minutes. The item was blocked and tied down in the truck bed without difficulty.

c. The test item was transported 114 miles on concrete and blacktop highways between test sites at Fort Lee and Camp Pickett, Virginia, and was subjected to emergency stopping tests at 10, 20, 30 and 45 mph with no damage occurring. During the stopping test, impact registers were mounted on the pump frame and on the truck bed to measure the stopping forces in the longitudinal, transverse, and vertical directions. Stopping distances were obtained by using a gun-type detonator marking device wired to the stoplight circuit of the truck and then measuring the distance with a steel tape. The directions and magnitudes of the stopping forces are recorded in Table I.

### 2. Cross-Country

The pump unit, mounted on the truck, cargo, 2 1/2-ton, 6x6, M35 and secured as described for the highway test, was transported 153 miles cross-country over rough terrain at Camp Pickett, Virginia, at an average speed of 10 mph without difficulty.

### 3. Rail

a. At Fort Lee, Virginia, the test item was towed onto a concrete loading ramp and then loaded onto a USAX 50-ton capacity, military standard domestic service flatcar equipped with AAR couplers at both ends. A 1 1/4-inch-wide 16-gage steel band was run through the trailer tongue eye and attached at each end by a 2x4x1/8-inch plate nailed to car deck with 8 3/16-inch diameter by 1 3/4-inch-long screw nails (Fig. 3). The test item was loaded and centered on the flatcar by two men in 15 minutes. Five men required 1 hour 30 minutes to chock and tie down the unit.

APPENDIX II

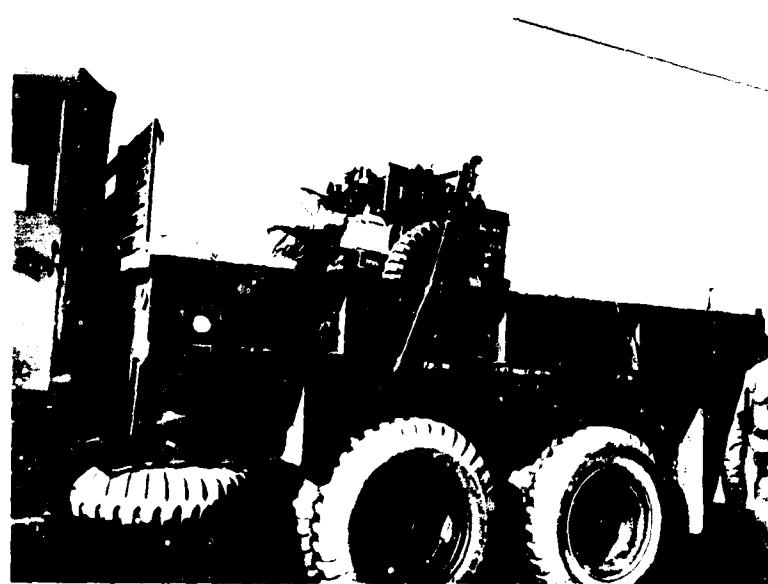


Figure 1. 600-GPM pump, trailer-mounted, loaded on truck for highway and cross-country testing.

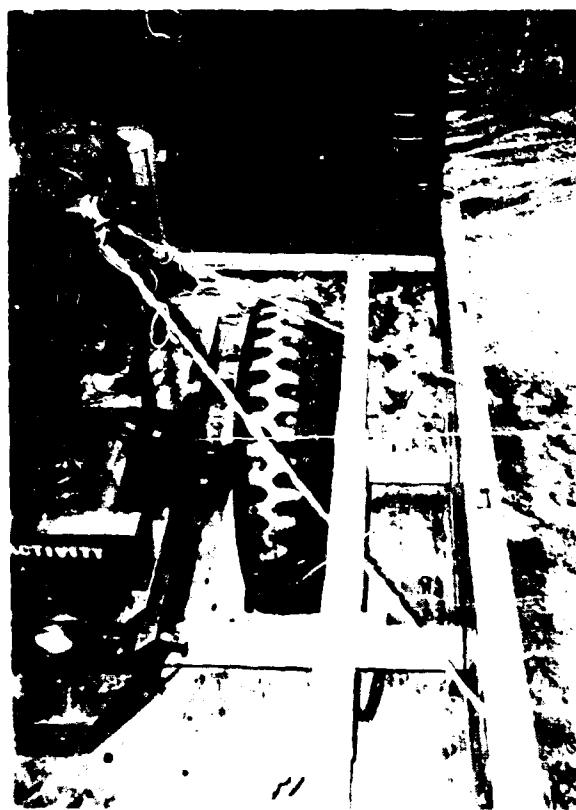


Figure 2. Pump unit blocked and tied down in truck bed.

APPENDIX C

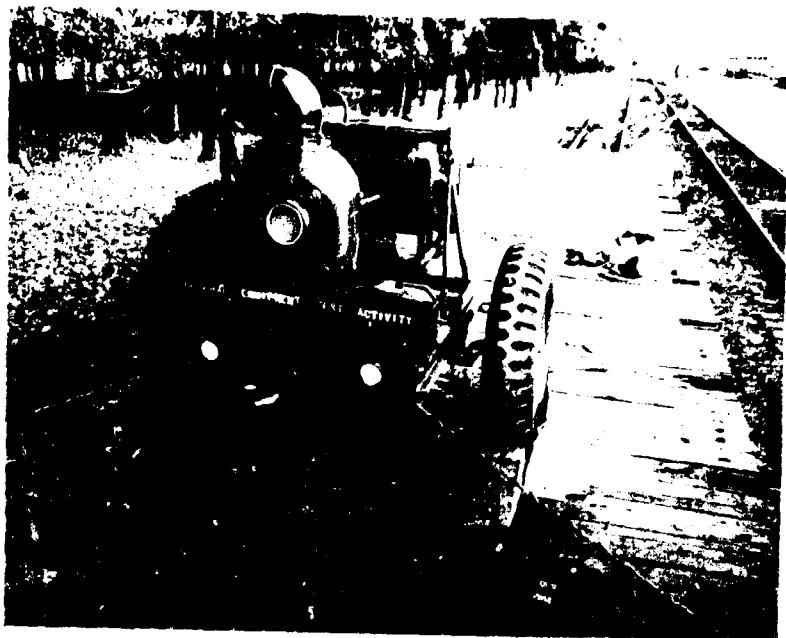


Figure 3. Pump unit  
chocked and tied down  
for rail impact test.



Figure 4. Tiedown eye  
after rail impact test  
with fractured weld and  
bent eye.

## APPENDIX II

b. Rail impact tests were conducted in accordance with AAR recommendations. Six empty flatcars having a total weight of 305,000 pounds were coupled together with the brakes set. Accelerometers were installed on the frame of the pump unit and on the deck of the test flatcar. Impacts were made at 4.18, 6.31, and 8.54 mph in the forward direction and 8.02 mph in the reverse direction. During the impact testing, the four tiedown eyes became permanently bent (Fig. 4). Maximum deflection at the bottom of the "U"-shaped eyes was 1 1/2 inches. Five of the eight welds, attaching the eyes to the pump frame, were fractured. Bending of the eyes caused the wires to become loose. The chocking and bracing did not suffer any damage. The direction and magnitude of impact forces and location of accelerometers are shown in Table II.

c. The test item, mounted on the flatcar with a deck height of 43 1/2 inches from the top of rail, without difficulty passed through the clearance device consisting of clearance diagrams of the AAR Standard, the International Universal Gage, and the Foreign Service Military Standard.

4. Lifting and Tiedown Attachments. The lifting and tiedown attachments did not meet the requirements of MIL-STD-209B (Table III).

**TABLE I**  
**EMERGENCY STOPPING TEST DATA**

**PUMP UNIT MOUNTED ON TRUCK, CARGO, 2 1/2 TON, 6x6, M35**

Run No.	Speed (MPH)	Max "G" Force Readings on Impact Register Tapes						Stopping Distance (Feet)	
		Mounted on Truck			Mounted on Pump				
		Vert	Lat	Long	Vert	Lat	Long		
1	10	0.2	0.6	0.8	0.2	0.6	0.8	8.6	
2	10	0.2	0.6	0.8	0.2	0.6	0.8	9.6	
3	10	0.4	0.6	0.8	0.2	0.6	0.8	9.8	
4	20	0.2	0.6	0.6	0.2	0.6	0.8	22.7	
5	20	0.2	0.6	0.6	0.2	0.6	0.8	24.8	
6	20	0.4	0.6	0.8	0.6	0.6	0.8	24.8	
7	30	0.2	0.6	0.8	0.2	0.6	0.8	55.3	
8	30	0.6	0.6	0.6	0.6	0.8	0.8	51.3	
9	40	0.2	0.6	0.6	0.2	0.6	0.8	45.8	
10	40	0.2	0.6	0.8	0.4	0.6	0.8	95.4	
11	45	0.2	0.6	0.6	0.4	0.6	0.8	108.3	
12	45	0.2	0.6	0.6	0.4	0.6	0.8	107.5	

## APPENDIX II

TABLE II

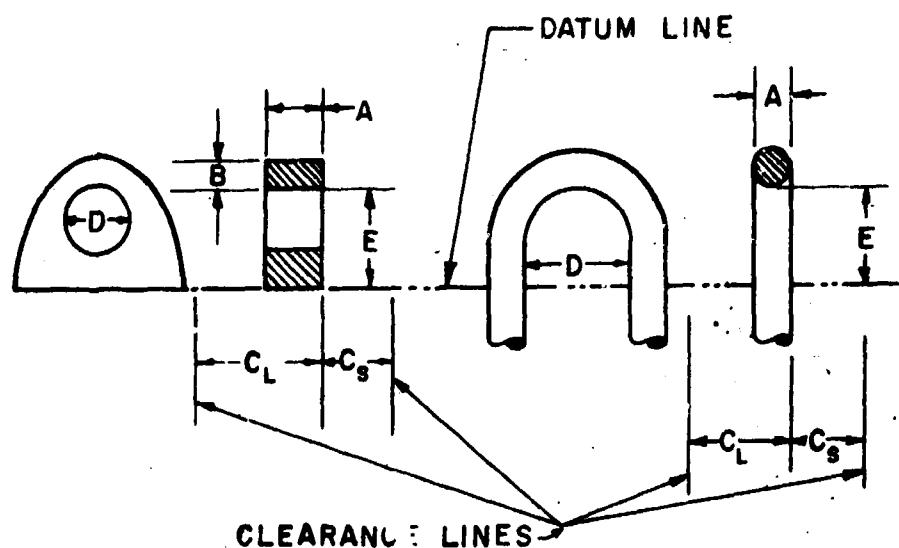
SUMMARY OF MAXIMUM "G" FORCES FOR IMPACT TEST ON FLATCAR

Run No.	Direction of Hump	Actual Car Speed (MPH)	Accelerometer Mounting Location						Buffer Car Movement (Inches)	
			Flatcar			Pump Frame				
			Vert	Lat	Long	Vert	Lat	Long		
1	Fwd	4.18	2.1	0.7	4.1	3.4	1.0	3.6	3	
2	Fwd	6.31	3.6	1.1	6.4	2.7	1.9	3.7	7	
3	Fwd	8.54	6.6	1.9	12.4	2.7	1.1	6.4	13	
4	Reverse	8.02	7.4	2.0	15.0	3.9	1.4	5.4	6	

## APPENDIX II

TABLE III

COMPARISON OF DIMENSIONS OF LIFTING AND TIEDOWN EYES  
(Dimensions are in inches)



	Weight Range (Long Ton 2240 lbs)	Restricting Points									
		A		B		$C_L$		$C_S$		D	
		Max	Min	Max	Min	Min	Min	Max	Min	Max	Min
MIL-STD-209B	1-10	1	3/4	1	3/4	7	3	3½	3	5	3
Type III Class I											
Lifting Eye (Only one provided)	1		½			No Rest	8½	3		3 5/8	
Tiedown Eyes (4 provided)	1		½			No Rest	16	2½		1 5/8	

<sup>a</sup>There shall be no interference with  $C_L$  and  $C_S$  which could interfere with engaging a shackle and pin in the eyes.

### APPENDIX III. MAINTENANCE EVALUATION

#### APPENDIX III-A

##### MAINTAINABILITY, RELIABILITY, AND AVAILABILITY SYMBOLS

The symbols listed below will be used as variables in the computations in Appendix III-B.

$R_L(x; 1-\alpha)$  = The lower confidence limit on reliability

$\chi^2_{1-\alpha/2r/2}$  = Chi-square value for a confidence level of 100 (1- $\alpha$ )% and  $2r/2$  degrees of freedom

x = Mission time

$1 - \alpha$  = Confidence coefficient

MTBF = Mean time between failures

MDT = Mean downtime

MTTR = Mean time to repair (failures)

$\bar{M}$  = Mean active maintenance downtime

MTBM = Mean time between maintenance

MR = Maintenance ratio

$A_i$  = Inherent Availability

$A_a$  = Achieved Availability

$A_o$  = Operational Availability

b = Operating Time (hours, miles, etc.)

c = Active maintenance man-hours (scheduled and unscheduled)

d = Active maintenance clock hours (scheduled and unscheduled)

f = Unscheduled active maintenance clock hours

g = Downtime in hours (include active and inactive maintenance time for both scheduled and unscheduled maintenance actions)

r = Number of failures

s = Number of maintenance layovers (include both scheduled and unscheduled maintenance actions)

p = Active maintenance man-hours to correct failures.

q = Active maintenance clock hours to correct failures.

### APPENDIX III-B

#### MAINTAINABILITY, RELIABILITY, AND AVAILABILITY COMPUTATIONS

	<u>#2282</u>	<u>#2283</u>	<u>Sample</u>
Mission Time (x)	= 20	= 20	= 20
Confidence Level (1- $\alpha$ )	= .90	.90	.90
No. of Failures (r)	= 0	1	1
Operating Time (b)	= 150.0	600.0	750.0
Maintenance Man-hours (c)	= 1.7	35.8	37.5
Maintenance Clock hours (d)	= 1.7	32.2	33.9
Unscheduled Maintenance clock hours (f)	= 0.3	13.0	13.3
Downtime (g)	= 1.7	51.8	53.5
No. of Maintenance Layovers (s)	= 3	15	18
Maintenance Man-hours (p)	= 0.0	4.0	4.0
Maintenance Clock hours (q)	= 0.0	4.0	4.0

#### COMPUTATIONS:

MDT = (g/s)	= 0.6	3.5	3.0
MTBF = (b/r)	= *	600.0	750.0
$\bar{M} = (d/s)$	= 0.6	2.1	1.9
MTTR (man-hours) = (p/r)	= *	4.0	4.0
MTTR (clock hours) = (q/r)	= *	4.0	4.0
MTBM = (b/s)	= 50.0	40.0	41.7
MR = (c/b)	= 0.011	0.060	0.050
$A_i = (MTBF / (MTBF/MTTR \text{ (clock hours)}))$	= 1.000	.993	.995
$A_a = (MTBM / (MTBM/\bar{M}))$	= .988	.950	.956
$A_o = (MTBM / (MTBM/MDT))$	= .988	.920	.933
RELIABILITY; $R_L (x, 1-\alpha) = \exp \left( -\frac{x^2 \chi^2_{1-\alpha, 2r+2}}{2b} \right) = .90$			

\* Indeterminable due to division by zero.

## APPENDIX III-C

MAINTENANCE AND RELIABILITY ANALYSIS CHART

GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL C - OPER/CREW O - ORGN F - DIRECT H - GENERAL	TM INSTRUCTIONS PRE-SCRIBED RECOMMENDED	Scheduled and Unscheduled Maintenance			REASON PERFORMED	REMARKS	
				ACTIVE MAINTENANCE TIME	LIFE HOURS	MILES			
1	2	3	4	5	6	7	8	9	10
0100	Service Engine (Change oil)	C	C	X	0.5	0.5	50	Scd	50-hour service EPR L7-2
0100	Service Engine	C	C	X	0.4	0.4	100	Scd	50-hour service
0100	Service Engine	C	C	X	0.3	0.3	150	Scd	50-hour service
0100	Service Engine	C	C	X	0.3	0.3	200	Scd	50-hour service
0607	Tachometer Replace	0	0	X	2.3	2.3	200	Unscd	Deferred to 250 hours Scd Maint EPR L7-3
0312	Choke Assy Automatic	0	0	X	1.5	1.5	225	Unscd	Deferred to 250 hours Scd Maint EPR L7-4
0100	Quarterly Service	0	0	X	6.7	6.7	250	Scd	Quarterly 250-hour Maintenance
1501	Lock Pin	0	0	X	0.2	0.2	250	Unscd	Lock pin lost EPR L7-5
0100	Service Engine (Change oil)	C	C	X	0.5	0.5	300	Scd	50-hour service

III-C-1

**MAINTENANCE AND RELIABILITY ANALYSIS CHART**

GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAIN LEVEL		ACTIVE MAINTENANCE TIME		LIFE HOURS M-MILES		REASON PERFORMED	REMARKS
		C-OPER/CREW	T-M INSTRUCTIONS	PRE-SCRIBED	RECOMMENDED	ADEQUATE	INADEQUATE		
1	2	3	4	5	6	7	8	9	10
0605	Magneto	0	F	X		4.0	4.0	316	Unscd
0603	Motor Starter	0	0	X		1.0	1.0	350	Unscd
0100	Service Engine	C	C	X		0.5	0.5	350	Scd
0100	Service Engine	C	C	X		0.5	0.5	400	Scd
0100	Service Engine	C	C	X		0.5	0.5	450	Scd
0100	Service Eng & Pump	0	0	X				500	Scd
0312	Auto Choke	0	0	X		0.1	0.1	500	Unscd
5501	Pump Seal	F	F	X		1.6	3.2	512	Unscd
0603	Starter	0	0	X		0.3	0.3	512	Unscd
5501	Primer Plug		F		X	2.0	4.0	512	Unscd
0100	Service Engine	C	C	X		0.5		550	Scd
0100	Service Engine	C	C	X		0.5		600	Scd

III-C-2

Final Technical inspection.

## MAINTENANCE AND RELIABILITY ANALYSIS CHART

GROUP NO	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL C - OPER/CREW O - ORGZN F - DIRECT H - GENERAL	TM INSTRUCTIONS	ACTIVE MAINTENANCE TIME	LIFE HOURS M - MILES	REASON PERFORMED	REMARKS		
1	2	3	4	5	6	7	8	9	10
0100	Service Engine	C	C	X	0.5	0.5	50	Scd	50-hour service
0100	Service Engine	C	C	X	0.4	0.4	110	Scd	50-hour service
5505	Check Valve	0	0	X			110	Unscd	EPR L7-1
0607	Control Panel Assembly	0	0	X	0.3	0.3	110	Unscd	EPR L7-1
0100	Service Engine	C	C	X	0.5	0.5	150	Scd	Final Tech. Insp.

## APPENDIX III-C

**MAINTENANCE AND RELIABILITY ANALYSIS CHART**

Simulated and Revised Maintenance									
GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL C-OPEP/CREW O-ORGZN F-DIRECT H-GENERAL	TM INSTRUCTIONS	ACTIVE MAINTENANCE TIME		LIFE HOURS M-MILES	REASON PERFORMED	REMARKS	
				PRESCRIBED	RECOMMENDED	IDE-QUATE	INADE-QUATE	CLOCK HOURS	MAN-HOURS
1	2	3	4	5	6	7	8	9	10
1.1	ENGINE:								
1.1.000	Engine Assembly								
1.1.000	Engine, Gasoline	C	X						
	Inspect	O	X						
	Test	C	X						
	Service	H	X						
	Replace	F	X						
	Overhaul	H	X						
1.3	FUEL SYSTEM:								
1.3.005	Tanks, lines, Fittings								
1.3.005	Tank	O	X						
	Service	O	X						
	Replace	H	X						
	Repair	F	X						
1.3.005	Lines, fittings								
	Inspect	O	X						
	Replace	O	X						

III-C-4

Reviewed-not performed.

Sim  
SimSim  
SimSim  
SimSim  
SimSim  
Sim"S"  
"S""S"  
"S""S"  
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"S""S"  
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MAINTENANCE AND RELIABILITY ANALYSIS CHART

GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL		TM INSTRUCTIONS		ACTIVE MAINTENANCE TIME		LIFE HOURS PERFORMED		REMARKS
		C-OPEP/CREW O-ORGZN F-DIRECT H-GENERAL	PRE-SCRIBED	RECOMMENDED	ADEQUATE	INADEQUATE	CLOCK HOURS	MAN-HOURS		
1	2	3	4	5	6	7	8	9	10	
34	EXHAUST SYSTEM									
3401	Muffler and Pipes Replace	O	O	X			0.2	0.2	"S"	Sim
36	ELECTRICAL SYSTEM									
3607	Control Panel Repair	O	O		X	E 1.0	E 1.0			Reviewed-not performed.
361	Batteries, Storage Inspect Service Replace	C	C	X		0.1	0.1	"S"	Sim	
		O	O	X		0.2	0.2	"S"	Sim	
		O	O	X		0.3	0.3	"S"	Sim	
37	REAR AXLE									
3700	Rear Axle Assembly Replace Repair	F	O	X		2.0	4.0	"S"	Sim	
38	WHEEL AND TRACKS									

## APPENDIX III-C

MAINTENANCE AND RELIABILITY ANALYSIS CHART

GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL C - OPER/CREW O - ORGAN F - DIRECT H - GENERAL	PRE-SCRIBED	RECOM-MENDED	ADE-quate	INADE-quate	CLOCK HOURS	MAN-HOURS	LIFE HOURS	REASON PERFORMED	REMARKS
1	2	3	4	5	6	7	8	9	10		
2-2	Air-coil Service Repair	O O	O O	X X			0.1 E 0.5	0.1 E 0.5	"S"	Sir.	Reviewed-not performed.
2-3	Tires, Tubes Inspection Service Repair	C C O O	C C X X			0.1 0.1 0.1 0.7	0.1 0.1 0.1 0.7	"S" "S" "S"	Sir. Sim Sim		
2-4	FRAME, TOWING ATTACHMENTS AND DRAWBAR										
2-6-1	Frame Repair	F F	F F	X X			E 2.0	E 2.0			Reviewed-not performed.
2-6-3	DRIVE BEAR Repair	F F	F F	X X			E 1.0	E 1.0			Reviewed-not performed.
2-7	SPY GLASSIS DR HULL AND ACCESSORY LINE										
	PEPSI STATION	C C	C C	X X			0.1 0.2	0.1 0.2	"S" "S"	Sir. Sim	

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MAINTENANCE AND RELIABILITY ANALYSIS CHART

GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL		ACTIVE MAINTENANCE TIME		LIFE HOURS		REASON PERFORMED	REMARKS		
		C - OPER/CREW	O - ORGN	T M INSTRUCTIONS	PRE-SCRIBED	RECOMMENDED	INADEQUATE	CLOCK HOURS	MILES		
1	2	3	4	5	6	7	8	9	10		
1	Driv. Platf. Repairs	C	O	X			0.2	0.2	"S"	Sim	
2	Pump Assembly Inspect Service Replace Repair Overhaul	C C F F H	C C F F X	X X X X X			0.1 0.1 2.0 E 2.0	0.1 0.1 4.0 4.0 4.0	"S" "S" "C" "S" "S"	Sim Sim Sim Sim Sim	
3	Pumps										
4	Shafts, impellers, Bearings, Seals										
5	Adjust Replace Repair	F F F	F F F	X X X			0.2 0.2 E 0.5	0.2 0.2 E 0.5	"S" "S" "S"	Sim Sim Sim	
6	Section and Disassemble; Install; Repair Put Drive into operation	O O	O O				0.2 0.2 0.5	0.2 0.2 0.5	"S" "S"	Sim Sim	

## APPENDIX III-C

MAINTENANCE AND RELIABILITY ANALYSIS CHART

GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL C - OPER/CREW O - ORGZN F - DIRECT H - GENERAL	TM INSTRUCTIONS PRE-SCRIBED	ACTIVE MAINTENANCE TIME ADEQUATE RECOMMENDED	LIFE HOURS INADEQUATE MAN-HOURS	REASON PERFORMED CLOCK HOURS MAN-HOURS	REMARKS	
							9	10
1	2	3	4	5	6	7	8	9
	2.0.1.1 P.1.1.1.1 C.1.1.1.1 P.1.1.1.1	C F	O F	X X		0.1 0.5	0.1 0.5	"S" "S"
						E 1.0	E 1.0	
								Reviewed-not performed.

## APPENDIX III-D

PARTS ANALYSIS CHART

Line #112

GP NO CROSS REF	FEDERAL STOCK NUMBER	NOUN MOMENCLATURE	MAINTENANCE LEVEL			PART LIFE H-HOURS M-MILES	REASON USED	REMARKS
			C-OPERATOR/CREW	F-DIRECT O-ORGANIZATIONAL	H-GENERAL			
			PREScribed	RECOMMEND.				
1	2	3	4	5	6	7		8
100	1940-580-6302	Filter Element	C	C	50.0 H	Scd.	50-Hour Oil Change	
101	1940-580-6302	Filter Element	C	C	100.0 H	Scd.		
102	MFJ PART NO. A001-M-36	Volute Casing	F	F	110.0 H	Unscd.	EPR L7-12.	
103	A006-6-M36	Check Valve Gasket	O	O	110.0 H	Unscd.	EPR L7-12.	
104	B500-M-36	Control Panel Assembly (Tachometer)	O	O	110.0 H	Unscd.	EPR L7-1.	

## APPENDIX III-D

PARTS ANALYSIS CHART

Item #H2283

GP NO. CROSS REF	FEDERAL STOCK NUMBER	NOUN NOMENCLATURE	MAINTENANCE LEVEL			PART LIFE H-HOURS M-MILES	REASON USED	REMARKS
			C- OPERATOR / CREW	F - DIRECT	O - ORGANIZATIONAL			
			PRESCRIBED	RECOMMEND.	5	6	7	8
0100	2940-580-6302	Filter Element Oil	C	C		50.0 H	Sed	EPR L7-2
0100	2940-580-6302	Filter Element Oil	C	C		100.0 H	Sed	
0100	2940-580-6302	Filter Element Oil	C	C		150.0 H	Sed	
0100	2940-580-6302	Filter Element Oil	C	C		200.0 H	Sed	
0100	2940-580-6302	Filter Element Oil	C	C		250.0 H	Sed	
0100	2940-580-6302	Filter Element Oil	C	C		300.0 H	Sed	
0100	2940-580-6302	Filter Element Oil	C	C		350.0 H	Sed	
0100	2940-580-6302	Filter Element Oil	C	C		400.0 H	Sed	
0100	2940-580-6302	Filter Element Oil	C	C		450.0 H	Sed	

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## APPENDIX III-D

PARTS ANALYSIS CHART

Item #H2283

GP NO. CROSS REF	FEDERAL STOCK NUMBER	NOUN NOMENCLATURE	MAINTENANCE LEVEL		PART LIFE H-HOURS M-MILES	REASON USED	REMARKS
			C- OPERATOR / CREW	F- DIRECT O- ORGANIZATIONAL H- GENERAL			
1	2	3	4	5	6	7	8
0312	MFG PART NO. 13206E0809	Choke Assembly Automatic Solenoid	0	0	200.0 H	Unscd	EPR L7-4.
0603	2920-867-8827	Magneto	0	F	316.0 H	Unscd	EPR L7-8, <u>Failure.</u>
0603	2920-882-3401	Motor, Starter	0	0	350.0 H	Unscd	
0603	2920-882-3401	Motor, Starter	0	0	512.0 H	Unscd	EPR L7-11.
0603	MFG PART NO. 13213E3286	Solenoid, Starter Motor	0	0	512.0 H	Unscd	EPR L7-11.
0607	MFG PART NO. 812831	Tachometer	0	0	225.0 H	Unscd	EPR L7-3.
1501	MFG PART NO. B004-M36	Lack pin	0	0	250.0 H	Unscd	EPR L7-5.
5501	MFG PART NO. A002-M36	Impeller	0	0	512.0 H	Unscd	EPR L7-11.

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## APPENDIX III-D

PART'S ANALYSIS CHART

CP NO. CROSS REF	FEDERAL STOCK NUMBER:	MOUNT NOMENCLATURE	MAINTENANCE LEVEL			PART LIFE H-HOURS M-MILES	REASON USED	REMARKS
			C-OPERATOR / CREW	F-DIRECT O-ORGANIZATIONAL	H-GENERAL			
		PRESCRIBED	RECOMMEND.					
1	2	3	4	5	6	7	8	
5501	MFG PART NO. A003-M36	Sleeve Shaft	0	0	512.0 H	Unscd	EPR L7-11.	
5501	MFG PART NO. A004-M36	Pump Seal	0	0	512.0 H	Unscd	EPR L7-11.	
5501	MFG PART NO. A009-M36	Plate Seal	0	0	512.0 H	Unscd	EPR L7-11.	
5501	MFG PART NO. A010-M36	Gasket	0	0	512.0 H	Unscd	EPR L7-11.	
5501	MFG PART NO. A100-M36	Inter-Assy	0	0	512.0 H	Unscd	EPR L7-11.	
5501	MFG PART NO. A907-M36	Shim Set	0	0	512.0 H	Unscd	EPR L7-11.	
5501	MFG PART NO. A909-M36	Primer Plug	F	F	512.0 H	Unscd	EPR L7-13.	

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## APPENDIX III-E

Maintenace Package Literature Chart

Manuscript		Title	Lit	Materiel	Adqt	Inadqt	Reference No. and date fwd	Form 1598	Remarks
Number	Qty								
1	2	3	4	5	6	7	8		9
TM 5- 2605- 204-14	1	Organizational DS and GS Maintenance Manual; Engine, Gasoline, Military Standard Models (Model 4-A084-II)	21 Aug 68	21 Aug 68	X				Satisfactory
Contract No. DAAK 01-67- C-A010	1	Operation, Mainte- nance and Overhaul Manual with parts list. Schleyer Model No. 36M-SPS 3011G-T, Pump, Centrifugal Gasoline Engine Driven	21 Aug 67		X		EPR L7-10 31 Dec 68		Changes submitted EPR L7-10 Electrical diagram submitted EPR L7-14

## APPENDIX IV

## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U. S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-ET-L 3. DATE: 21 August 1968 4. EPR NO. L7-1	
5. TO Commanding General U. S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 ROT&E PROJ NO. CONTRACT NO. DAAK01-67C-A010	
		7. TEST TITLE Pump, Cent. 600 Gal/Min. Water	
I. MAJOR ITEM DATA			
8. MODEL 36M-SPS3011G-T	9. SERIAL NO. H-2282		
10. QUANTITY One	11. LIFE PERIOD 0 Hours		
12. MFR. E. C. Schleifer Pump Co., Inc.	13. USA NO.		
II. PART DATA			
14. NOMENCLATURE/DESCRIPTION Eng. 4A084II Tachometer			
15. FSN	16. MFR. PART NO. 102-812831		
17. DRAWING NO.	18. MFR. Hercules Engines Inc.		
19. QUANTITY One	20. NEXT ASSEMBLY -		
21. STD. GOVT. GRP.	22. PART TEST LIFE 0 Hours		
III. INCIDENT DATA			
23. OBSERVED DURING <input checked="" type="checkbox"/> a. OPERATION <input type="checkbox"/> b. MAINTENANCE <input checked="" type="checkbox"/> c. IP Test	24. TEST ENVIRONMENT POL Test Area	25. INCIDENT CLASS <input type="checkbox"/> e. DEFICIENCY <input checked="" type="checkbox"/> f. SHORTCOMING <input type="checkbox"/> g. SUG. IMPROVEMENT <input type="checkbox"/> h. OTHER	26. ACTION TAKEN <input type="checkbox"/> a. REPLACED <input type="checkbox"/> b. REPAIRED <input type="checkbox"/> c. ADJUSTED <input type="checkbox"/> d. DISCONNECTED <input type="checkbox"/> e. REMOVED <input checked="" type="checkbox"/> f. NONE
27. DATE AND HOUR OF INCIDENT 1300 hours, 20 August 1968		IV. INCIDENT DESCRIPTION	
28. DESCRIBE INCIDENT FULLY  When engine was started to perform IP Tests, it was noted that the tachometer was inoperative.  This failure is considered to be a shortcoming.			
29. DEFECTIVE MATERIAL SENT TO: 30. NAME, TITLE & TEL EXT OF PREPARER  <i>M. A. Stowell</i> MARCEL A. STOWELL Project Leader - 2186			
31. FOR THE COMMANDER:  <i>by M. A. Stowell</i> JAMES T. DONAHUE Chief, Log Spt Eq Test Div			

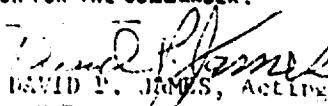
## APPENDIX IV

## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Ft Lee, VA 23801		2. OFFICE SYMBOL: STEGE-SS-MED 3. DATE: 14 October 1968 4. EPR NO. 17-2	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 ROTNE PROJ NO. CONTRACT NO. DAAK01-67-C-A010 7. TEST TITLE Pump, Cent, 600 Gal/Min, Water	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL J6X-SPSJU11GT	9. SERIAL NO. H-2283	10. QUANTITY 1	11. LIFE PERIOD 50 hours
12. MFR. E.C. Schleifer Pump Co. Inc.	13. USA NO. N/A		
<b>II. PART DATA</b>			
14. NOMENCLATURE/DESCRIPTION Breather Assembly Air Inlet		15. MFR. PART NO. 13206E0550	16. MFR. 97403 ERDL
17. FSN 2520-867-8819	18. DRAWING NO. N/A	19. NEXT ASSEMBLY Engine Block	20. PART TEST LIFE 50 hours
21. STD. GOVT. SPN. 0106	22. PART TEST LIFE 50 hours		
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING <input checked="" type="checkbox"/> 6. OPERATION <input checked="" type="checkbox"/> 7. MAINTENANCE <input type="checkbox"/> 8.	24. TEST ENVIRONMENT River Test Site	25. INCIDENT CLASS <input checked="" type="checkbox"/> 1. DEFICIENCY <input checked="" type="checkbox"/> 2. SHORTCOMING <input checked="" type="checkbox"/> 3. BIG IMPROVEMENT <input type="checkbox"/> 4. OTHER	26. ACTION TAKEN <input checked="" type="checkbox"/> 1. REPLACED <input checked="" type="checkbox"/> 2. REPAIRER <input checked="" type="checkbox"/> 3. ADVERTISED <input checked="" type="checkbox"/> 4. PREPARED <input checked="" type="checkbox"/> 5. OTHER
27. DATE AND HOUR OF INCIDENT 9 October 1968	28. TIME 0900 hours	29. I. E. See block	
<b>IV. INCIDENT DESCRIPTION</b>			
30. DESCRIBE INCIDENT FULLY (Reference TM 5-2805-204-14, page 42, figure 38; Lubrication Order 5-2805-204-14, page 13, figure 6)			
<p>a. The crankcase breather assembly is not accessible for removal with tools found in the general mechanics tool set (FSN 5180-754-0641) when the engine is hot.</p> <p>b. Removal of the breather assembly during the 50 hour service on the hot engine tends to burn the repairman's hand because of the insufficient work space. Improvised tools (i.e., cam lock pliers) will be used and damage to breather assembly will result.</p> <p>c. The 50 hour scheduled service is easy to neglect because of the difficulty and hazard involved, and contributes to premature engine failure.</p> <p>d. Improper design is considered to be the cause of this incident.</p> <p>e. Redesign of the breather assembly to permit removal with a socket wrench on top is suggested.</p>			
31. DEFECTIVE MATERIAL SENT TO: 32. NAME, TITLE & EXT OF PERSONNEL		33. SIGN THE COMMISSIONER: <i>J. T. Harvey</i> ROBERT A. NULK MAJ, CRD Chief, Maintenance Evaluation Div	
JOSEPH T. HARVEY Equip Spec (Gen) ext 1006		IV-2	

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**APPENDIX IV**  
**EQUIPMENT PERFORMANCE REPORT**

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGF-TE-S 3. DATE: 18 November 1968 4. EPR NO. 1.7-3-(1-2)	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSE-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 NOT BE PROJ NO. CONTRACT NO. DAAK01-67-C-A010	
		7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 3GM-SPS3011G-T	9. SERIAL NO. H-2283		
10. QUANTITY 2	11. LIFE PERIOD 230 hours		
12. MFR. E. C. Schleyer Pump Co., Inc.	13. USA NO. N/A		
<b>II. PART DATA</b>			
14. NOMENCLATURE/DESCRIPTION Tachometer	15. FSN None	16. MFR. PART NO. 812831	
17. DRAWING NO. N/A	18. MFR. 57733		
19. QUANTITY one	20. NEXT ASSEMBLY Control Panel		
21. STD. GOVT. GRP. 0607 - Control Panel	22. PART TEST LIFE 230 hours		
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING <input checked="" type="checkbox"/> OPERATION <input type="checkbox"/> MAINTENANCE <input type="checkbox"/> OTHER	24. TEST ENVIRONMENT River test site	25. INCIDENT CLASS <input type="checkbox"/> DEFICIENCY <input checked="" type="checkbox"/> SHORTCOMING <input type="checkbox"/> DUE IMPROVEMENT <input type="checkbox"/> OTHER	26. ACTION TAKEN <input type="checkbox"/> REPLACED <input type="checkbox"/> REPAIRED <input type="checkbox"/> ADJUSTED <input type="checkbox"/> DISCONNECTED <input type="checkbox"/> REMOVED <input checked="" type="checkbox"/> NONE See 28
27. DATE AND HOUR OF INCIDENT 1600, 12 Nov 68			
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			
<p>a. Tachometer readings fluctuated from 3000 to 3200 rpm over an extended period. At the time of the incident, the tachometer indicated less than 100 rpm. Check test with instrumented portable tachometer indicated that engine was running at pre-set 3200 rpm (Page 8, para 2-10-6, manufacturer's manual). Operations continued, and maintenance was deferred until regular scheduled 250-hour quarterly maintenance service.</p> <p>b. Incident is classified as a shortcoming pending evaluation of repairs required.</p>			
29. DEFECTIVE MATERIAL SENT TO: N/A		30. NAME, TITLE & TEL EXT OF PREPARER	
THOMAS M. MORGAN, 114, 114 Test Officer, NMIE/TOL, Pump Test Sr Ext. 1585/1697		31. FOR THE COMMANDER:	
		 DAVID P. JAMES, Acting Chd. NMIE/TOL Equipment Test Branch Service Test Division, Testing Directorate	

## APPENDIX IV

## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: SPEGE-SS-E 3. DATE: 21 November 1968 4. EPR NO. 1.7-4	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, MO. 63120		6. USATECOM PROJ NO. 7-8-0961-01 ROTC&E PROJ NO. CONTRACT NO.	
		7. TEST TITLE Pump, Centrifugal, 600 GPM	
8. MODEL 36M-SPS 3011 GT		9. SERIAL NO. H-2283	
10. QUANTITY 2		11. LIFE PERIOD 250 hours	
12. MFR. F.C. Schleifer Pump Co., Inc.		13. USA NO. N/A	
II. MAJOR ITEM DATA			
14. NOMENCLATURE/DESCRIPTION Choke Assembly, Automatic			
15. FSN N/A		16. MFR. PART NO. 13206E0809	
17. DRAWING NO. N/A		18. MFR. 97403	
19. QUANTITY 1		20. NEXT ASSEMBLY Carburetor	
21. STD. GOVT. EXP. 03.12		22. PART TEST LIFE 250 hours	
III. INCIDENT DATA			
23. OBSERVED DURING <input checked="" type="checkbox"/> OPERATION <input checked="" type="checkbox"/> MAINTENANCE <input type="checkbox"/> C.		24. TEST ENVIRONMENT GETA Maintenance Shop	
		25. INCIDENT CLASS <input checked="" type="checkbox"/> DEFICIENCY <input checked="" type="checkbox"/> SHORTCOMING <input checked="" type="checkbox"/> MAJOR DEFECT <input checked="" type="checkbox"/> OTHER	
		26. ACTION TAKEN <input checked="" type="checkbox"/> REPLACED <input checked="" type="checkbox"/> REMOVED <input checked="" type="checkbox"/> ADJUSTED <input checked="" type="checkbox"/> INSTRUCTED <input checked="" type="checkbox"/> REPAIR	
27. DATE AND HOUR OF INCIDENT 19 Nov 68, 1015 hrs		X <input checked="" type="checkbox"/> See block 28	
IV. INCIDENT DESCRIPTION			
28. DESCRIBE INCIDENT FULLY			
<p>a. The automatic choke failed to function when cold start of engine was required during quarterly maintenance.</p> <p>b. Testing with a multi-meter revealed an open circuit in the automatic choke.</p> <p>c. Cause of shortcoming is unknown.</p> <p>d. Testing of the major item will continue.</p> <p>e. The hand choke will be used when necessary until a replacement automatic choke assembly is obtained.</p> <p>f. A temperature sensitive (thermal) type choke is recommended over the present electrical type which appears to be (2 position) completely open or completely closed.</p> <p>g. Request documentation regarding operation of the automatic choke and basic requirement for an electrical type choke on the test item be furnished this command, AFIS: SPEGE-SS-E.</p>			
29. DEFECTIVE MATERIAL SENT TO:			
30. NAME, TITLE & RANK OF PERSONNEL		31. NAME, TITLE & RANK OF PERSONNEL	
JOSEPH J. HARVEY Equip Spec (Cpl) MED. SSD, ext 1006		ROBERT A. NULK MAJ, ORD Chief, MED. SSD	

SPEGE Form 1028, 10-68 (67) REPLACES AFMTE Form 1028, 10-68

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AFMTE Form 1028, 10-68 (67)

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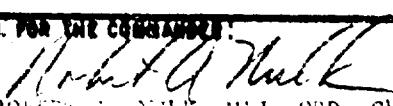
## APPENDIX IV

**EQUIPMENT PERFORMANCE REPORT**

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Ft. Lee, VA 22901		2. OFFICE SYMBOL: STECE-SS-E 3. DATE: 21 November 1968 4. EPR NO. 17-5 5. USATECOM PROJ NO. 7-8-0961-01	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, MO 63120		6. USATECOM PROJ NO. MOTSE PROJ NO. CONTRACT NO. 7. TEST TITLE Pump, Centrifugal, 600 GPM	
		<b>I. MAJOR ITEM DATA</b>	
8. MODEL 36M-SPS 3011 GT	9. SERIAL NO. H-2283		
10. QUANTITY 2	11. LIFE PERIOD 250 hours		
12. MFR. E.C. Schleyer Pump Co., Inc.	13. USA NO. N/A		
		<b>II. PART DATA</b>	
14. NOMENCLATURE / DESCRIPTION Pin, Anchor on Trailer		15. MFR. PART NO. B003-M36	
16. FSN N/A	17. DRAWING NO. N/A	18. MFR. E.C. Schleyer Pump Co. Inc.	
19. QUANTITY 3	20. NEXT ADDRESS Trailer Frame		
21. STD. GOVT. CTR. 1501	22. PART TEST LIFE 250 hours		
		<b>III. INCIDENT DATA</b>	
23. OCCURRED DURING a. OPERATION	24. TEST ENVIRONMENT GEIA Maintenance Shop	25. INCIDENT CLASS b. DEFICIENCY X d. SHORTCOMING	26. ACTION TAKEN X e. REPLACED f. PURCHASED g. AMENDED h. DISCOMMENDED i. RECOMMENDED j. REMOVED k. NONE
27. DATE AND HOUR OF INCIDENT 19 November 1968, 1015 hrs	<b>IV. INCIDENT DESCRIPTION</b>		
28. DESCRIBE INCIDENT FULLY			
<p>a. During quarterly maintenance inspection, the lock pin on the right side of the trailer was observed missing and assumed lost during movement from the test site to the maintenance shop. The lock pin is attached to the test item frame with a chain and split ring. The ring opening is covered by wrapping with friction tape, as are the other 2 lock pins on the test item.</p> <p>b. The friction tape had slipped away from the ring opening, permitting the pin to separate from the chain and apparently was lost.</p> <p>c. The method of retaining the lock pins by covering the ring opening with friction tape is not considered satisfactory.</p> <p>d. Additional study is being made of the incident and recommendations for improvement will be submitted.</p>			
29. DEFECTIVE MATERIAL SENT TO: 30. NAME, TITLE & TEL NO. OF PERSON		31. FOR THE COMMANDER <i>Robert A. Nulk</i> ROBERT A. NULK MAJ, ORD Chief, MED, SSD	
JOSEPH T. HARVEY Equip Spec (Gen) MED, SSD, ext 1006		IV-5      USATECOM REGULATION 7-8-1	

## APPENDIX IV

**EQUIPMENT PERFORMANCE REPORT**

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-SS-E 3. DATE: 26 November 1968 4. EPA NO. SPECIAL See Block 28	
5. TO Commanding General U.S. Army Mobility Equipment Command ATIN: AMSME-QRT 1400 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. REF ID PROJ NO. CONTRACT NO. 7. TEST TITLE See Block 28	
<b>II. MAJOR ITEM DATA</b>			
8. MODEL	9. SERIAL NO.		
10. QUANTITY	11. LIFE PERIOD		
12. EPA	13. UOM NO.		
<b>III. PART DATA</b>			
14. NOMENCLATURE / DESCRIPTION		Tachometer (Electrical)	
15. P/N		16. EPA PART NO. 102 and 812831	
17. DRAWING NO.		18. MFR. Stewart Warner	
19. QUANTITY		20. NEXT ASSEMBLY Engine	
21. STD. QVT. EXP.		22. PART TEST LIFE 0; 30; 225; 344 5 hrs	
<b>IV. INCIDENT DATA</b>			
23. RECEIVED PERIOD	24. TEST ENVIRONMENT	25. INCIDENT CLASS	26. ACTION TAKEN
27. OPERATION	See Block 28	28. DEFICIENCY	29. REPLACED
29. MAINTENANCE		30. SHORTCOMING	31. REPAIR
32. OTHER		33. INSUFFICIENT	34. AMENDED
33. OTHER		35. OTHER	36. DISCONTINUED
37. DATE AND NUMBER OF INCIDENT?		38. HISTORY	
<b>V. INCIDENT DESCRIPTION</b>			
39. DESCRIBE INCIDENT FULLY			
<p>a. During initial production tests of the 200-GPM Centrifugal Pumps (USATECOM Project No. 7-7-0784-01), and the 600-GPM Centrifugal Pumps (USATECOM Project No. 7-8-0961-01), malfunctions of the same component (electrical tachometer, Mfr. No. 102-812831 and 812831) occurred on all test items (4).</p> <p>b. Repeated malfunctions of a single component on separate equipment appears significant enough to warrant a special investigation prior to future procurement of items using the component. Whether or not this tachometer is used on end items other than those listed above is unknown at this time.</p> <p>c. Attached for consideration are the problem areas and supporting data which document the component malfunctions.</p> <p>d. The malfunctions of the tachometer are classified together as a deficiency insofar as the tachometers themselves are concerned--even though the malfunctions were separately classified as shortcomings with regard to the mission accomplishment of the end items to which they were attached. One or more of the aspects of quality control, accuracy, reliability, durability, and application have caused the tachometers to be inadequate for the performance of their intended functions.</p>			
(Continued)			
40. DEFECTIVE MATERIAL SENT TO:		41. FOR THE COMMANDER:	
JOSEPH T. HARVEY, Equip Spec (Cen) MED, SSD, ext 1006		 ROBERT A. NILES, MAJ, ORD, Chief, MED, SSD	

**APPENDIX IV**

**STECE-SS-E  
EPR NO.: SPECIAL**

**Block 28, Continued:**

**e. It is recommended that:**

- (1) An investigation, study, or test be conducted to identify and correct the problem.**
- (2) Consideration be given to use of a mechanical tachometer in place of the electrical tachometer on the aforementioned items.**

**USATECOM Project Nos. 7-7-0784-01 and 7-8-0961-01**

## APPENDIX IV

STEGE-SS-E  
EPR No.: SPECIAL

Problems concerning the tachometer were as follows:

1. One tachometer tested upon receipt was inaccurate by 800 rpm, indicating a need for improved quality control.
2. Another tachometer was tested after 30 operating hours and was found to be inaccurate by 400 rpm, indicating a possibility of poor quality control or low reliability.
3. Two additional tachometers developed malfunctions at 225.0 and 344.5 test hours respectively, indicating a high mortality rate.
4. Electrical schematic wiring diagrams, furnished with the test items, were not identical to actual wiring of the test items, thereby causing additional problems during corrective maintenance.
5. The actual wiring of the two test items using the same tachometer and control panel was not identical and did not conform to schematic wiring diagrams as furnished by the manufacturer.
6. Two organizational maintenance personnel assigned to the test projects were not knowledgeable about troubleshooting the tachometer and its associated component: electrical sender, Mfr. No. 811532. Either additional troubleshooting information should be included in the literature or additional training should be provided for the mechanics (62B20 and 63C20).
7. A combined mechanical tachometer/hour meter used on the 350-GPM Pump (FSN 4320-916-9172) appears to be more reliable and would eliminate the electrical problem areas.

USATECOM Project Nos. 7-7-0784-01 and 7-8-0961-01

*Final 1*

## APPENDIX IV

STEGE-SS-E  
EPR NO.: SPECIAL

END ITEM	EPR OR REFER- ENCE	DATE OF EPR	TEST HRS OF PART	NAME AND #R OF COMPONENT	MFR PART NUMBER	MALFUNCTION
200-GPM Centrifugal Pump, Gorman-Rupp, 392664, (USATECOM 7-7-0784-01)	L7-10	16 Aug 68	344.5	Tachometer Stewart- Warner	102-812831	Indicator (Needle) fell off its shaft
200-GPM Centrifugal Pump, Gorman-Rupp, 392632, (USATECOM 7-7-0784-01)	Eng. Test Report Input, Mr. Stowell	20 Jun 68	30.0	Tachometer Stewart- Warner	102-812831	Inaccurate by 400 rpm
600-GPM Centrifugal Pump, GED 4", Wheel Md, E.C. Schleyer, H2283, (USATECOM 7-8-0961-01)	L7-3- (1-2)	13 Nov 68	225.0	Tachometer Stewart- Warner	812831	Indicator fluctuated and then dropped to 100 rpm. Engine speed continued at 3200 rpm
600-GPM Centrifugal Pump, GED 4", Wheel Md, E.C. Schleyer, H2282, (USATECOM 7-8-0961-01)	L7-1	21 Aug 68	0.0	Tachometer Stewart- Warner	812831	Inoperative on receipt

USATECOM Project Nos. 7-7-0784-01 and 7-8-0961-01

*End 2*

## EQUIPMENT PERFORMANCE REPORT

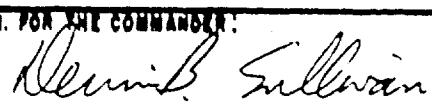
1. FROM Commanding Officer US Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-TE-T 3. DATE: 29 November 1968 4. EPR NO. 17-6 7-8-0961-01	
5. TO Commanding General US Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. RDT&E PROJ NO. CONTRACT NO.	
		7. TEST TITLE Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36M-SPS 3011 GT	9. SERIAL NO. H-2283		
10. QUANTITY 3	11. LIFE PERIOD 20 hours		
12. MFR. E. C. Schleyer Pump Co., Inc.	13. USA NO. NA		
<b>II. PART DATA</b>			
14. NOMENCLATURE/DESCRIPTION Tiedown Eyes			
15. FBN UNK	16. MFR. PART NO. UNK		
17. DRAWING NO. Fig 1-2, Pg 2, Oper Maint & Ovh	18. MFR. E. C. Schleyer Pump Co., Inc		
19. QUANTITY Man 4	20. NEXT ASSEMBLY Frame, Trailer		
21. STD. GOVT. GRP. 18	22. PART TEST LIFE 20 hours		
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING	24. TEST ENVIRONMENT	25. INCIDENT CLASS	
<input type="checkbox"/> C. OPERATION	Rail Transportability	<input type="checkbox"/> a. DEFICIENCY	<input type="checkbox"/> b. REPLACED
<input type="checkbox"/> D. MAINTENANCE		<input checked="" type="checkbox"/> b. SHORTCOMING	<input type="checkbox"/> c. REPAIRED
<input checked="" type="checkbox"/> e. Rail Humping Test		<input type="checkbox"/> c. BUG IMPROVEMENT	<input type="checkbox"/> d. ADJUSTED
		<input type="checkbox"/> d. OTHER	<input type="checkbox"/> e. DISCONNECTED
		<input type="checkbox"/> f. REMOVED	
27. DATE AND HOUR OF INCIDENT	1530 hours, 27 November 1968	X 28. ACTION TAKEN <input type="checkbox"/> f. NONE	
<b>IV. INCIDENT DESCRIPTION</b>			
29. DESCRIBE INCIDENT FULLY  During the 8 MPH railcar hump test, the 4 tiedown eyes bent and 5 of the 8 welds securing the eyes to the pump frame fractured.			
30. DEFECTIVE MATERIAL SENT TO: NA			
31. NAME, TITLE & TEL EXT OF PREPARER  <i>William J. Coolsby</i> WILLIAM J. COOLSBY Project Director LOTS Test Branch, TTD, X1595		31. FOR THE COMMANDER:  DONAVON F. WOOSTER Acting Chief LOTS Test Branch, TTD	

## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-TE-S 3. DATE: 5 December 1968 4. EPR NO. L7-7	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 RDT&E PROJ NO. CONTRACT NO. DAAK01-67-C-A010	
		7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36M-SPS3011G-T	9. SERIAL NO. H-2283		
10. QUANTITY 3	11. LIFE PERIOD 300 hours		
12. MFR. E.C. Schleyer Pump Co., Inc.	13. USA NO. N/A		
<b>II. PART DATA</b>			
14. NOMENCLATURE/DESCRIPTION Wire from Tachometer Sending Unit to Tachometer, Engine 4A064II	15. FSN None	16. MFR. PART NO. 812831	
17. DRAWING NO. Fig 12	18. MFR. Stewart and Warner	19. QUANTITY one	
20. NEXT ASSEMBLY Tachometer	21. STD GOVT. GRP.	22. PART TEST LIFE 300 hours	
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING <input checked="" type="checkbox"/> a. OPERATION	24. TEST ENVIRONMENT Beach test site, Fort Story, VA	25. INCIDENT CLASS <input checked="" type="checkbox"/> a. DEFICIENCY	26. ACTION TAKEN <input checked="" type="checkbox"/> a. REPLACED
<input type="checkbox"/> b. MAINTENANCE		<input checked="" type="checkbox"/> b. SHORTCOMING	<input checked="" type="checkbox"/> b. REPAIRED
<input type="checkbox"/> c.		<input type="checkbox"/> c. SUG. IMPROVEMENT	<input type="checkbox"/> c. ADJUSTED
		<input type="checkbox"/> d. OTHER	<input type="checkbox"/> d. DISCONNECTED
			<input type="checkbox"/> e. REMOVED
27. DATE AND HOUR OF INCIDENT 2 Dec 68, 0900		X	f. NONE
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			
<p>a. The wire extending from the tachometer sending unit to the tachometer became pinched between the top and bottom shrouds of the engine. The top shroud is taken off the engine for performance of daily maintenance on the engine. When this top shroud is replaced, this wire becomes pinched unless extreme care is exercised. Reference Fig 12, Page 21, TM 5-2805-204-14, Jul 65.</p> <p>b. From a performance viewpoint, this is considered a shortcoming because no provisions have been made to keep the wire from being pinched during performance of daily maintenance.</p>			
29. DEFECTIVE MATERIAL SENT TO: N/A		30. NAME, TITLE & TEL EXT OF PREPARER	
THOMAS M. HORGAN, 1LT, TC, Test Officer Fort Story Test Facility AUTOVON 555-1420, ext 5104 STC Form 1023, 10 Dec 67 REPLACES AMSTE Form 1023.		31. FOR THE COMMANDER:  DENNIS B. SULLIVAN, MAJ, QMC Chief, MHE and POL Equipment Test Branch Service Test Division, Testing Directorate USATECOM REGULATION 705-4	

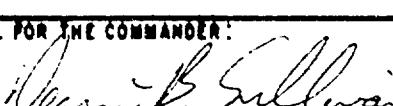
## APPENDIX IV

## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-ST-M 3. DATE: 9 December 1968 4. EPR NO. L7-8	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 ROT & BE PROJ NO. CONTRACT NO. DAAK01-67-C-A010	
		7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36M-SPS3011G-T	9. SERIAL NO. H-2283		
10. QUANTITY 3	11. LIFE PERIOD 316 hours		
12. MFR. E. C. Schleifer Pump Co., Inc.	13. USA NO. N/A		
<b>II. PART DATA</b>			
14. NOMENCLATURE/DESCRIPTION Magneto			
15. FSN 2920-867-8867	16. MFR. PART NO. 13206E1280		
17. DRAWING NO. N/A	18. MFR. Fairbanks-Morse		
19. QUANTITY 1	20. NEXT ASSEMBLY Timing Gear		
21. STD. GOVT. GRP. 0605	22. PART TEST LIFE 316 hours		
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING <input checked="" type="checkbox"/> OPERATION <input checked="" type="checkbox"/> MAINTENANCE <input type="checkbox"/> N.	24. TEST ENVIRONMENT Salt water pumping operations, Fort Story, Virginia	25. INCIDENT CLASS <input checked="" type="checkbox"/> DEFICIENCY <input checked="" type="checkbox"/> SHORTCOMING <input checked="" type="checkbox"/> SUB. IMPROVEMENT <input checked="" type="checkbox"/> OTHER	26. ACTION TAKEN <input checked="" type="checkbox"/> REPLACED <input checked="" type="checkbox"/> REPAIRED <input checked="" type="checkbox"/> DISMANTLED <input checked="" type="checkbox"/> REMOVED <input type="checkbox"/> NONE
27. DATE AND HOUR OF INCIDENT 4 Dec 68, 0930		IV. INCIDENT DESCRIPTION	
28. DESCRIBE INCIDENT FULLY			
<p>a. Test item engine would not start.</p> <p>b. Inspection and trouble-shooting revealed malfunction of the magneto (Serial No. 5805606).</p> <p>c. Partial disassembly of the component revealed:</p> <p>(1) Center carbon contact point of distributor cap to rotor was completely worn out. Spring tension was gone, and the carbon contact point was rendered totally inoperative.</p> <p>(2) The contact point set (82796 22437H) plate was loose (four screws were only hand tight).</p> <p>(3) 1/8" lateral movement was evident in the magneto drive gear.</p> <p>d. Incident is classified as a deficiency because it caused the engine to be inoperative.</p> <p>e. Cause of incident is attributed to faulty assembly of the magneto by the manufacturer.</p>			
29. DEFECTIVE MATERIAL SENT TO: Retained		30. NAME, TITLE & EXT OF PREPARED	
THOMAS M. HORGAN, 1LT, TC, Test Officer Fort Story Test Facility AUTOVON 555-1420, ext 5104		31. FOR THE COMMANDER:  DENNIS B. SULLIVAN, MAJ, QMC Chief, MHE and POL Equipment Test Branch Service Test Division, Testing Directorate	

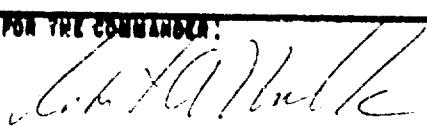
## APPENDIX IV

**EQUIPMENT PERFORMANCE REPORT**

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-TE-S 3. DATE: 16 December 1968 4. EPR NO. L7-9	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 ROT&E PROJ NO. CONTRACT NO. DAAK01-67-C-A010	
		7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36M-SPS301iG-T	9. SERIAL NO. H-2283		
10. QUANTITY 3	11. LIFE PERIOD 350 hours		
12. MFR. E. C. Schleifer Pump Co., Inc.	13. USA NO. N/A		
<b>II. PART DATA</b>			
14. NOMENCLATURE/DESCRIPTION Motor, Starter, 24v, Solenoid Actuated	15. FSN 2920-882-3401	16. MFR. PART NO. MSS3013-1	
17. DRAWING NO. Fig 18, Item No. 5	18. MFR. Military Standard		
19. QUANTITY 1	20. NEXT ASSEMBLY Engine		
21. STD. GOVT. GRP.	22. PART TEST LIFE 350 hours		
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING <input checked="" type="checkbox"/> OPERATION <input type="checkbox"/> MAINTENANCE <input type="checkbox"/> OTHER	24. TEST ENVIRONMENT Salt water pumping operations, Fort Story, Virginia	25. INCIDENT CLASS <input checked="" type="checkbox"/> DEFICIENCY <input checked="" type="checkbox"/> SHORTCOMING <input type="checkbox"/> BUD. IMPROVEMENT <input type="checkbox"/> OTHER	26. ACTION TAKEN <input type="checkbox"/> REPLACED <input type="checkbox"/> REPAIRED <input type="checkbox"/> ADJUSTED <input type="checkbox"/> DISCONNECTED <input type="checkbox"/> REMOVED
27. DATE AND HOUR OF INCIDENT 10 Dec 68, 1100 hours		X 28. NONE See para 28	
<b>IV. INCIDENT DESCRIPTION</b>			
29. DESCRIBE INCIDENT FULLY			
<p>a. Starter motor failed to function. Reason for malfunction is unknown. There was no difficulty in starting the pump manually.</p> <p>b. This is judged to be a shortcoming because the pump can continue to operate. If cause of malfunction can be determined, a supplementary EPR will follow.</p> <p>c. EPR was telephoned to USATECOM 13 Dec 68, 1500 hours.</p>			
30. DEFECTIVE MATERIAL SENT TO: N/A		31. FOR THE COMMANDER:	
32. NAME, TITLE & TEL EXT OF PREparer		 DENNIS B. SULLIVAN, MAJ, QMC Chief, MHE and POL Equipment Test Branch Service Test Division, Testing Directorate	
THOMAS M. HORGAN, 1LT, TC, Test Officer Fort Story Test Facility AUTOMAN 555-1420 ext 5104		33. USATECOM REGULATION 705-4	
STL Form 1025, 10 DEC 67 REPLACES ANSTE Form 1025,		IV-13	

## APPENDIX IV

**EQUIPMENT PERFORMANCE REPORT**

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-SS-E 3. DATE: 19 December 1968 4. EPR NO. L7-9s	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 PROJ & E PROJ NO. CONTRACT NO. DAAK01-67-C-A010	
		7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36N-SP33011G-T	9. SERIAL NO. H-2283		
10. QUANTITY 3	11. LIFE PERIOD 350 hours		
12. MFR. E.C. Schleifer Pump Co. Inc.	13. USA NO. N/A		
<b>II. PART DATA</b>			
14. NOMENCLATURE/DESCRIPTION Motor Starter, 24 volt, Solenoid Actuated	15. P/N 2920-882-3401	16. MFR. PART NO. MS53013	
17. DRAWING NO. Fig 18, Item No. 5	18. MFR. Military Standard		
19. QUANTITY 1	20. NEXT ASSEMBLY Engine		
21. STD. GOVT. GRD. 0603	22. PART TEST LIFE 350 hours		
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING <input checked="" type="checkbox"/> OPERATION <input checked="" type="checkbox"/> MAINTENANCE <input type="checkbox"/> C.	24. TEST ENVIRONMENT Salt Water Pumping Operations, Fort Story, Virginia	25. INCIDENT CLASS <input type="checkbox"/> DEFICIENCY <input checked="" type="checkbox"/> SHORTCOMING <input type="checkbox"/> MAINTENANCE <input type="checkbox"/> OTHER	26. ACTION TAKEN <input type="checkbox"/> REPLACED <input checked="" type="checkbox"/> REPAIRED <input type="checkbox"/> DISMANTLED <input type="checkbox"/> DISMANTLED <input type="checkbox"/> REMOVED <input type="checkbox"/> NONE
27. DATE AND HOUR OF INCIDENT			
<b>IV. INCIDENT DESCRIPTION</b> 28. DESCRIBE INCIDENT FULLY (Reference EPR L7-9)			
<p>d. Disassembly of the starter revealed corrosion on the armature and all internal parts of the starter.</p> <p>e. This is attributed to the salt water environment.</p> <p>f. The starter was cleaned with dry solvent, dried, reassembled, tested and returned to service and is operating satisfactory.</p> <p>g. Recommendation: Page 38, Paragraph 52-C(2), TM 5-2805-204-14 contains a "caution": "Every 250 hours remove starter drive gear housing and tighten the two screws that hold the end plate on the starter." Recommend this "caution" be placed in the end item manual under Quarterly Maintenance and include cleaning the starter motor internally.</p>			
DEFICIENCIES AND SHORTCOMINGS ARE SUBJECT TO RECLASSIFICATION			
29. DEFECTIVE MATERIAL SENT TO:		30. NAME, TITLE & RANK OF PREPARED	
JOSEPH T. HARVEY Equip Spec (Gen) MED, SSD; ext 1006/4487		31. FOR THE COMMANDER:  ROBERT A. NULK, MAG, ORD, C, MED, SSD	

## APPENDIX IV

**EQUIPMENT PERFORMANCE REPORT**

1. FROM Commanding Officer. U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-SS-E 3. DATE: Dec. 31, 1968 4. EPR NO. L7-10	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 R&T&E PROJ NO. DAAK01-67-C-A010 CONTRACT NO.	
		7. TEST TITLE Initial Production Test of Pump Centrifugal, 600-GPM	
<b>IV. MAJOR ITEM DATA</b>			
8. MODEL 36-M-SPS3011G-T	9. SERIAL NO. N/A		
10. QUANTITY 3	11. LIFE PERIOD N/A		
12. MFR. E. C. Schleyer Pump Co. Inc.	13. USA NO. N/A		
<b>V. PART DATA</b>			
14. NOMENCLATURE / DESCRIPTION Operation, Maintenance & Overhaul Manual, with Parts List			
15. FSN	16. MFR. PART NO.		
17. DRAWING NO.	18. MFR.		
19. QUANTITY	20. NEXT ASSEMBLY		
21. STD. GOVT. REF.	22. PART TEST LIFE		
<b>VI. INCIDENT DATA</b>			
23. OBSERVED DURING <input checked="" type="checkbox"/> OPERATION <input type="checkbox"/> MAINTENANCE <input type="checkbox"/> X Manual Review	24. TEST ENVIRONMENT Maintenance Evaluation	25. INCIDENT CLASS <input type="checkbox"/> DEFICIENCY <input type="checkbox"/> SHORTCOMINGS <input checked="" type="checkbox"/> XX. SUG. IMPROVEMENT <input type="checkbox"/> OTHER	26. ACTION TAKEN <input type="checkbox"/> REPLACED <input type="checkbox"/> REPAIRED <input type="checkbox"/> AMENDED <input type="checkbox"/> DISCONTINUED <input type="checkbox"/> REMOVED
27. DATE AND HOUR OF INCIDENT	XX. See block 28		
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			
<p>a. Attached are recommended changes and additions to Operation, Maintenance and Overhaul Manual with Parts List for Schleyer 600-GPM Centrifugal Pump, Model No. 36M-SPS3011G-T.</p> <p>b. During conduct of the test, the manual was continuously evaluated to determine its applicability and adequacy for the test item. The suggested recommendations should improve the operation and maintenance of the test item.</p>			
DEFICIENCIES AND SHORTCOMINGS ARE SUBJECT TO RECLASSIFICATION			
29. DEFECTIVE MATERIAL SENT TO:		30. NAME, TITLE & RANK OF PREPARED:	
JOSEPH T. HARVEY, Equip Spec (GEN) ext 1006/44S7		31. FOR THE COMMANDER:  ROBERT A. NULK, MAJ, ORD, C, MED, SSD	

## APPENDIX IV

RECORD OF COMMENTS ON PUBLICATIONS  
(AR 310-3)DATE  
17 Dec 68

SUBJECT Operation, Maintenance & Overhaul Manual w/parts list, Schleyer Model No. 36M-SPS  
3011G-T, Centrifugal Pump, Gasoline Eng Driven, USATECOM Project No. 7-8-0961-01  
REVISION NOTES FROM

ITEM NR	PAGE	PARAGRAPH	LINE*	COMMENT (Exact wording of recommended change must be given)
1	iii	During Operations		<p><u>Add:</u> "CAUTION: Do not tow trailer over 30 mph on surface roads."</p> <p><u>Explanation:</u> Page 1, Par. 1-2-0, indicates the above caution. DURING OPERATIONS appears to be the logical place for this caution. Information furnished to the test officer reveals that the test item is not designed for towing at convoy speeds (1. Test item has no safety chain; 2. Test item is wheel mounted only for ease of movement in work area).</p>
2	iii	After Operations (2nd Par.)		<p><u>Delete</u> the whole paragraph.</p> <p><u>Explanation:</u> This paragraph is a duplication of paragraph 4 on the same page and can be deleted.</p>
3	iii	After Operations (3rd Par.)		<p><u>Delete</u> the whole paragraph. <u>Add</u> whole paragraph in appropriate section of manual, Pars. 3-15b and 3-15d.</p> <p><u>Explanation:</u> Tank repairs requiring welding or soldering would require removal. Instructions shown should be in the removal paragraphs.</p>
4	1	1-1	4	<p><u>Delete:</u> "operation"; <u>add:</u> "maintenance instructions."</p> <p><u>Explanation:</u> Chapter 2, Section III, NOTE, in TM 5-2805-204-14 states that operating instructions are not provided in this manual. However, maintenance instructions for the engine are provided.</p>
5	1	1-2.A	7	<p><u>Delete:</u> "instrument"; <u>add:</u> "control."</p> <p><u>Explanation:</u> Control is used for identity nomenclature in parts list and figures designated throughout manual.</p>
6	1	1-2.A	7	<p><u>Delete:</u> "(Fig 1-2)"; <u>add:</u> "(Fig 2-2)." </p> <p><u>Explanation:</u> Figure 1-2 does not show the controls. Figure 2-2 show the controls.</p>
7	1	1-2.D	3	<p><u>Delete:</u> "stand"; <u>add:</u> "support leg."</p> <p><u>Explanation:</u> Support leg is used for proper nomenclature in parts list.</p>
8	4	1-3.C	5	<p><u>Add after "head":</u> "and equals total of lift and discharge head measured in feet."</p> <p><u>Explanation:</u> This explanation may help avoid field problems when specified 600-GPM cannot be accomplished because Total Dynamic Head (TDH) is not fully understood. The 350-GPM Pump appears to be the same as the 600-GPM Pump and the TDH is the significant factor.</p>
9	5	1-5.A.2		<p><u>Recommendation:</u></p> <p>1. The performance plate be eliminated on future procurements because:</p>

\* Reference to line number within the paragraph or subparagraph

DA FORM 1 DEC 55 1598

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U. S. GOVERNMENT PRINTING OFFICE: 1959 O - 462068

## APPENDIX IV

RECORD OF COMMENTS ON PUBLICATIONS					DATE
					17 December 1968
SUBJECT Operation, Maintenance & Overhaul Manual w/parts list, Schleyer Model No. 36M-SPS 3011G-T, Centrifugal Pump, Gasoline Engine Driven, USATECOM Project No. 7-8-0961-01					
REVISION NOTES FROM					
ITEM NR	PAGE	PARAGRAPH	LINE*	COMMENT (Exact wording of recommended change must be given)	
9	5	1-5.A.2 (Continued)		<p>a. It was not used during testing.</p> <p>b. The operator did not know its purpose.</p> <p>c. The technical manual contains no instructions for its use.</p> <p>2. If the above recommendation is not acceptable:</p> <p>a. Add to the manual instructions for use of the performance plate.</p> <p>b. Place caution in the manual to prevent painting over the performance plate.</p> <p>c. Add an illustration in the manual of the performance plate to be used when the actual performance plate is no longer serviceable (i.e., TM 5-4320-242-15, Page 2-11, MEC 5-4320-242-15/2-4).</p> <p><u>Explanation:</u> Self explanatory.</p>	
10	7	2.7.A	1	<p><u>Add after "SUCTION LINE": "CAUTION: Attach a suitable strainer before operating pump."</u></p> <p><u>Explanation:</u> A strainer is not provided as a basic issue item and must be obtained on site. A caution is recommended to prevent operation, and subsequent damage, without a strainer.</p>	
11	8	2.9	1	<p><u>Delete line 1.</u></p> <p><u>Explanation:</u> The controls on the engine are not described in TM 5-2805-204-14.</p>	
12	8	2.9	3	<p><u>Add after "control panel": "(Fig 2.2)." </u></p> <p><u>Explanation:</u> The controls referenced are shown in Fig 2.2.</p>	
13	8	2.9	15	<p><u>Add after "position": "and the oil pressure switch depressed."</u></p> <p><u>Explanation:</u> The oil pressure switch must be depressed to complete the magneto ignition circuit when oil pressure is below 20 psi as indicated further in this paragraph. Specified instructions are required to avoid starting difficulties with inexperienced operators.</p>	
14	8	Fig 2-2		<p><u>Delete:</u> "Override low oil pressure cut-off switch."  <u>Add:</u> "Start engine."</p> <p><u>Explanation:</u> Simpler language is applicable for the intended level of reading. The last sentence in Par. 2.9 explains the function of the low oil pressure switch; however, previous experience has revealed operators do not fully comprehend this explanation.</p>	
15	8	2-10.1	3	<p><u>Delete:</u> "Fig 3-2". <u>Add:</u> "Fig 3-1."</p> <p><u>Explanation:</u> Fig 3-2 refers to electrical wiring diagram. Fig 3-1 refers to preventive maintenance.</p>	

\* Reference to line number within the paragraph or subparagraph.

DA FORM 1 DEC 55 1598

IV-17

U. S. GOVERNMENT PRINTING OFFICE 1650-6208

## APPENDIX IV

RECORD OF COMMENTS ON PUBLICATIONS				For use of this form, see AR 310-3; the proponent agency is Office of the Assistant Chief of Staff for Force Development.	DATE
				17 Dec 68	
SUBJECT Operation, Maintenance & Overhaul Manual w/parts list, Schleyer Model No. 36M-SPS 3011G-T, Centrifugal Pump, Gasoline Driven, USATECOM Project No. 7-8-0961-01					
REVISION NOTES FROM					
ITEM NO.	PAGE	PARAGRAPH	LINE *	COMMENT (Exact wording of recommended change must be given.)	
16	8	2-10.4	3	<u>Add</u> after "(TM 5-2805-205-14)": "Figure 5." <u>Explanation:</u> To help operator find the proper figure and instructions for the oil baffel control. Fig 3, TM 5-2805-204-14 shows a clearer view of the oil baffel control. However, there are no instructions for the oil baffel control on Fig 3. Consideration should be given for inclusion of the instructions and illustration in the "end item" operators manual because this is an operational function.	
17	8	2-10.6		<u>Change</u> as follows: "Depress oil pressure switch and start switch." <u>Explanation:</u> Oil pressure switch must be depressed for all initial startings, or when less than 25 psi oil pressure is in the system (Ref Par. 2.9).	
18	9	2-12	1	<u>Add</u> after "stopping": "CAUTION: Reduce engine speed to 700 or 800 rpm with the governor control to prevent back firing." <u>Explanation:</u> Back firing occurs when run-stop switch is activated to the stop position at high speed.	
19	9	2-14.D		<u>Add</u> after "warm up": "by manually adjusting governor control to approximately 1500 rpm." <u>Explanation:</u> Engine governor control is pre-set at 3200 rpm (Par. 2-10.6, note) and will attain this speed immediately unless it is controlled manually by the operator.	
20	10	2-18.4		<u>Change</u> paragraph as follows: "Hold choke control in the OUT position while pulling rope to start engine." <u>Explanation:</u> Manual choking is required when the battery is weak or dead (Ref. Par. 2-10.6, note).	
21	12	3-6	5	<u>Delete</u> NOTE. <u>Explanation:</u> The note may be deleted because the instruction is shown in line 1 of Par. 3.6 (items 1 through 15) and again on page 13, item 9.	
22	17	Fig 3-7	Item 9	<u>Delete</u> : "INSULATED." <u>Add</u> : "STARTER SOLENOID." <u>Explanation:</u> Both cables are insulated so this would not properly identify the item. Item 7 is identified as the ground cable. Adding starter solenoid to item 9 will standardize the nomenclature for identification purposes and should be added in parts list.	
23	19	3-16	1	<u>Delete</u> : "3-9." <u>Add</u> : "5-1." <u>Explanation:</u> Fig 3-9 illustrates the fuel system. Fig 5-1 illustrates trailer parts.	

\* Reference to line number within the paragraph or subparagraph.

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1 DEC 61

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## APPENDIX IV

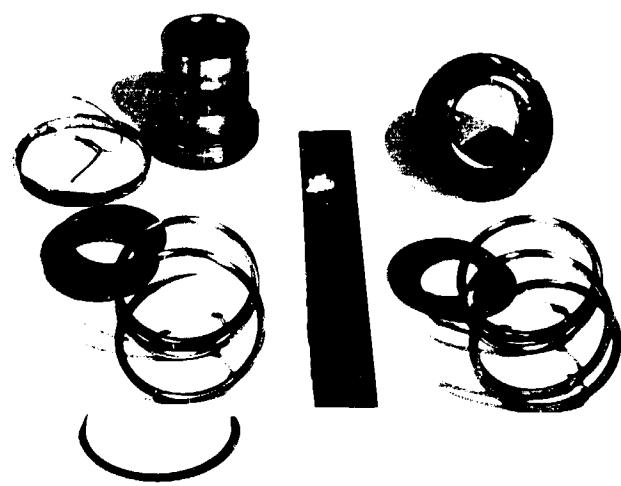
RECORD OF COMMENTS ON PUBLICATIONS				For use of this form, see AR 310-3. The proponent agency is Office of the Assistant Chief of Staff for Force Development.	DATE 17 Dec 68
SUBJECT	Operation, Maintenance & Overhaul Manual w/parts list, Schleyer Model No. 36M-SPS3011G-T, Centrifugal Pump, Gasoline Driven, USATECOM Project No. 7-8-0961-01				
REVISION NOTES FROM					
ITEM NO.	PAGE	PARAGRAPH	LINE *	COMMENT (Exact wording of recommended change must be given.)	
24	20	3-16.Ca	1	<u>Add</u> after "refer to". "paragraph 3.18 and". <u>Explanation:</u> Paragraph 3.18 directs that pump and engine will be removed as a unit.	
25	22	3-18.B.3		<u>Delete:</u> "to the pump and engine assembly." <u>Add:</u> "in the threaded hole on top of the intermediate housing and the engine block." <u>Explanation:</u> An eye bolt threaded into these holes was used satisfactorily during service testing.	
26	23	4-2.B	1	<u>Delete:</u> "(41)". <u>Add:</u> "(44)". <u>Explanation:</u> While (41) is incorrect, (44) is correct (see Fig 4-1, Page 26 and Par. 4.4e3, Page 25, and parts list 4-1-44, Page 29).	
27	23	4-3.B.1	1	<u>Delete:</u> "retaining." <u>Add:</u> "snap". <u>Explanation:</u> Standardizing nomenclature with parts list nomenclature, Page 29, Index 4-1-37.	
28	25	Fig 4-1		<u>Add:</u> "item 21." <u>Explanation:</u> Items 22 and 23, combined, are item 21. The parts list shows item 21 but does not show items 22 and 23.	
29	30	Index No. 3-7-7		<u>Add</u> after battery: "ground." <u>Explanation:</u> To simplify ordering of parts and reduce error.	
30	30	Index No. 3-7-9		<u>Add</u> after battery: "starter solenoid." <u>Explanation:</u> Same as item 29, above.	
31	31	Index No. 3-12-1		<u>Delete:</u> "Washer lock 3/8-in, MS 35338-46." <u>Add:</u> "Screw cap, 3/8-in x 16-1, MS 90725-16." <u>Explanation:</u> To make the parts list correspond with Figure 3-12, No. 1.	
32	31	Index No. 3-12-2		<u>Delete:</u> "Screw cap, 3/8-16-1, MS 90725-16." <u>Add:</u> "Washer, lock, 3/8-in, MS 35338-46." <u>Explanation:</u> To make the parts list correspond with Figure 3-12, No. 2.	

\* Reference to line number within the paragraph or subparagraph.

## APPENDIX IV

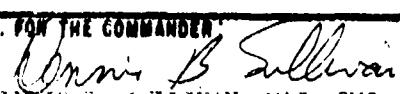
## EQUIPMENT PERFORMANCE REPORT

1 FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-TE-S 3. DATE: 10 January 1969 4. EPR NO. L7-11	
5 TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 RDT&E PROJ NO. CONTRACT NO.	
		7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36M-SPS3011G-T	9. SERIAL NO. H-2283		
10. QUANTITY 2	11. LIFE PERIOD 512 hours		
12. MFR. E. C. Schleyer Pump Co., Inc.	13. USA NO. N/A		
<b>II. PART DATA</b>			
14. NOMENCLATURE/DESCRIPTION Pump Seal	15. MFR. PART NO. A-0004-M36		
16. FSN None	17. DRAWING NO. None		
18. MFR. 71724	19. QUANTITY 1		
20. NEXT ASSEMBLY Intermediate Housing	21. STD. GOVT. GRP. 5501		
22. PART TEST LIFE 512 hours			
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING <input checked="" type="checkbox"/> a. OPERATION <input type="checkbox"/> b. MAINTENANCE <input type="checkbox"/> c.	24. TEST ENVIRONMENT Normal pumping operations - fresh water	25. INCIDENT CLASS <input checked="" type="checkbox"/> a. DEFICIENCY <input type="checkbox"/> b. SHORTCOMING <input type="checkbox"/> c. BUG IMPROVEMENT <input type="checkbox"/> d. OTHER	26. ACTION TAKEN <input checked="" type="checkbox"/> a. REPLACED <input type="checkbox"/> b. REPAIRED <input type="checkbox"/> c. ADJUSTED <input type="checkbox"/> d. DISCONNECTED <input type="checkbox"/> e. REMOVED <input type="checkbox"/> f. NONE
27. DATE AND HOUR OF INCIDENT 1100, 9 Jan 69			
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			
<p>a. At 512 test hours, water began spraying from the flywheel housing of the engine to the extent that the test item had to be stopped.</p> <p>b. Disassembly of the pump revealed the seal (Schleyer part No. A004-M36) to be completely worn out and the spring broken, and the intermediate housing half filled with sand (see attached photographs).</p> <p>c. The incident is classified as a deficiency because continued operation would cause damage to the test item and the efficiency of the pump was lowered below an acceptable level.</p> <p>d. Cause of the incident is attributed to premature failure of the pump seal (A004-M36) following salt water (surf) operations.</p>			
DEFICIENCIES AND SHORTCOMINGS AND SUBJECT TO RECLASSIFICATION			
29. DEFECTIVE MATERIAL <del>SEARCHED</del> RETAINED AND PHOTOCOPIES ATTACHED.			
30. NAME, TITLE & TEL EXT OF PREPARER <i>Thomas M. Horgan, 1LT/T</i> THOMAS M. HORGAN, 1LT, TC Test Officer, MHE/POL Equip Test Br Ext 1585/1697	31. FOR THE COMMANDER: <i>Dennis B. Sullivan</i> DENNIS B. SULLIVAN, MAJ, QMC Chief, MHE/POL Equipment Test Branch Service Test Division, Testing Directorate		



## APPENDIX IV

## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-TE-S 3. DATE: 15 January 1969 4. EPR NO. L7-12		
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMXME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 RDT&E PROJ NO. CONTRACT NO.		
7. TEST TITLE Initial Production Test of Pump, Centrifugal. 600 GPM				
8. MODEL 36M-SPS3011G-T 9. QUANTITY 2 10. MFR. E.C. Schleyer Pump Co., Inc.		11. MAJOR ITEM DATA 12. SERIAL NO. H-2282 13. LIFE PERIOD 110 service test hours 14. USA NO. N/A		
II. PART DATA				
15. NOMENCLATURE/DESCRIPTION Volute Casing 16. PSN None 17. DRAWING NO. None 18. QUANTITY 1 19. STD. Govt. GRP. 5500		20. MFR. PART NO. Schleyer A-001-M36 21. MFR. Schleyer 22. NEXT ASSEMBLY Intermediate housing 23. PART TEST LIFE 110 hours		
III. INCIDENT DATA				
24. OBSERVED DURING <input checked="" type="checkbox"/> a. OPERATION <input checked="" type="checkbox"/> b. MAINTENANCE <input checked="" type="checkbox"/> c. Before-operation inspection		25. TEST ENVIRONMENT Below freezing temperatures	26. INCIDENT CLASS <input checked="" type="checkbox"/> d. DEFICIENCY <input checked="" type="checkbox"/> e. SHORTCOMING <input checked="" type="checkbox"/> f. SUB. IMPROVEMENT <input checked="" type="checkbox"/> g. OTHER	27. ACTION TAKEN <input checked="" type="checkbox"/> h. REPLACED <input checked="" type="checkbox"/> i. REPAIRED <input checked="" type="checkbox"/> j. ADJUSTED <input checked="" type="checkbox"/> k. DISCONNECTED <input checked="" type="checkbox"/> l. REMOVED <input checked="" type="checkbox"/> m. NONE
28. DATE AND HOUR OF INCIDENT 13 January 1969, 0600 hours				
IV. INCIDENT DESCRIPTION				
30. DESCRIBE INCIDENT FULLY  a. Water left in the pump froze and cracked the volute casing #A-001-M36 approximately 3 inches on the outer surface.  b. During disassembly of the pump casing, the check valve was found to be damaged.  c. The volute casing is being repaired by Heli-Arc Welding and will be hydrostatically tested.  d. Test operations will be resumed using the volute casing of test item H-2322 as a replacement.				
DEFICIENCIES AND SHORTCOMINGS ARE SUBJECT TO RECLASSIFICATION				
31. CORRECTIVE MATERIAL SENT TO: THOMAS M. HORGAN, 1LT, TC Test Officer, MHE/POL Equip Test Br Ext 1585/1697		32. FOR THE COMMANDER:  DENNIS F. SULLIVAN, MAJ, QMC Chief, MHE/POL Equipment Test Branch Service Test Division, Testing Directorate		

THIS FORM 1025, 10 DECEMBER 1967, REPLACES AFMTC FORM 102.

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USATECOM REGULATION 705-4

## APPENDIX IV

**EQUIPMENT PERFORMANCE REPORT**

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-TE-S 3. DATE: 15 January 1969 4. EPR NO. L7-13	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 7. RDT&E PROJ NO. CONTRACT NO.	
		7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 9. QUANTITY 10. MFR.	36M-SPS3011G-T 2 Schleyer Pump Co., Inc.	9. SERIAL NO. H-2283 11. LIFE PERIOD 512 hours 12. USA NO. None	
<b>II. PART DATA</b>			
13. NOMENCLATURE/DESCRIPTION 14. PBM 15. DRAWING NO. 16. QUANTITY 21. STD. GOVT. GRP.	Priming Plug None None 1 5500	17. MFR. PART NO. A-909-M36 18. MFR. Schleyer 20. NEXT ASSEMBLY Volute casing 22. PART TEST LIFE 512 hours	
<b>III. INCIDENT DATA</b>			
23. ACTIVITY DURING 24. OPERATION 25. MAINTENANCE 26. Initial inspection prior to operations	27. TEST ENVIRONMENT Pump had just been removed from Maint Shop after quarterly maintenance had been accomplished.	28. INCIDENT CLASS <input checked="" type="checkbox"/> DEFICIENCY <input checked="" type="checkbox"/> SHORTCOMING <input type="checkbox"/> BUG IMPROVEMENT <input type="checkbox"/> OTHER	29. ACTION TAKEN <input checked="" type="checkbox"/> REPLACED <input type="checkbox"/> REPAIRER <input type="checkbox"/> ADMITTED <input type="checkbox"/> DISMANTLED <input type="checkbox"/> REVIEWED <input type="checkbox"/> NONE
30. DATE AND HOUR OF INCIDENT	13 January 1969, 0800 hours		
<b>IV. INCIDENT DESCRIPTION</b>			
31. DESCRIBE INCIDENT FULLY			
<p>a. Prior to operation, the priming plug A-909-M36 was broken during removal to prime the pump. The entire wrench area of the plug twisted off, leaving an opening into the pump housing. The remaining portions (thread section) were removed by hacksawing and a screw extractor.</p> <p>b. The incident is classified as a shortcoming because the pump could not be primed until the item was repaired.</p> <p>c. Cause of the incident is attributed to using a ferrous metal plug in a nonferrous metal volute casing, resulting in seizure (unequal expansion and contraction of dissimilar metals and corrosion by electrolysis) of the plug to the volute casing, making removal difficult.</p>			

DEFICIENCIES AND SHORTCOMINGS ARE SUBJECT TO RECLASSIFICATION

32. DIRECTIVE MATERIAL SENT TO:  
THOMAS M. HORGAN, 1LT, TCTest Officer, MHE/POL Equip Test Br  
Ext 1585/1697

33. FOR THE COMMANDER:

  
 DENNIS B. SULLIVAN, MAJ, QMC  
 Chief, MHE/POL Equipment Test Branch  
 Service Test Division, Testing Directorate

34. FORM ISSUED, TO DIRECTOR NEAREST ANNUAL TEST DATE

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## APPENDIX IV

**EQUIPMENT PERFORMANCE REPORT**

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, VA 23801		2. OFFICE SYMBOL: STEGE-SS-E 3. DATE: 16 January 1969 4. EPM ID: L7-14
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. DATAECON PROJ NO. 7-8-0961-01 NOT GE PROJ NO. CONTRACT NO.
		7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM, Water
		8. WORK DATA
9. MODEL 10. QUANTITY 11. MANUFACTURER	36M-SPS3011GT 2 E.C. Schleyer Pump Co., Inc.	12. SERIAL NO. H 2283 13. LIFE PERIOD N/A 14. USA NO. N/A
		15. PART DATA
16. NOMENCLATURE/DESCRIPTION Operation, Maintenance & Overhaul Manual with Parts List.		17. MFR. PART NO. N/A
18. P/N 19. DRAWING NO. 20. QUANTITY 21. STD. GOVT. GRP.	N/A N/A 1 N/A	22. MFR. Schleyer Pump Co. Inc. 23. NEXT ASSEMBLY N/A 24. PART TEST LIFE N/A
25. INCIDENT DATA		26. INCIDENT CLASS
27. INCIDENT SOURCE X 28. Simulated Maint	Maintenance Shop	XX 29. DEFICIENCY 30. INSTRUMENTATION 31. EQUIPMENT 32. OTHER
33. DATE AND HOUR OF INCIDENT 15 January 1969 1330		34. REMARKS XX 35. See block 28
36. INCIDENT DESCRIPTION		
37. DESCRIBE INCIDENT FULLY		
<p>a. Attached is a shop sketch of the actual wiring as found on the above test item. This wiring does not correspond to the schematic diagram, Fig 3-2, Page 16, of the maintenance manual furnished with the test item.</p> <p>b. Incident is classified as a deficiency until corrective action is approved and the remainder of items under contract are verified for correct wiring. Accurate maintenance instructions must be provided that reflect correct wiring of test item prior to issue.</p>		
38. APPROVING MATERIAL TESTED: JOSEPH T. HARVEY, Equip Spec (Gen), MED ext 1006		39. APPROVING MAJOR: ROBERT A. NULK, MAJ, ORD, C, MED, SSD

APPENDIX IV

REFERENCE DESIGNATIONS

M-1 PRESSURE INDICATE

M-2 TACHOMETER

P-1 PLUG 8505-M36

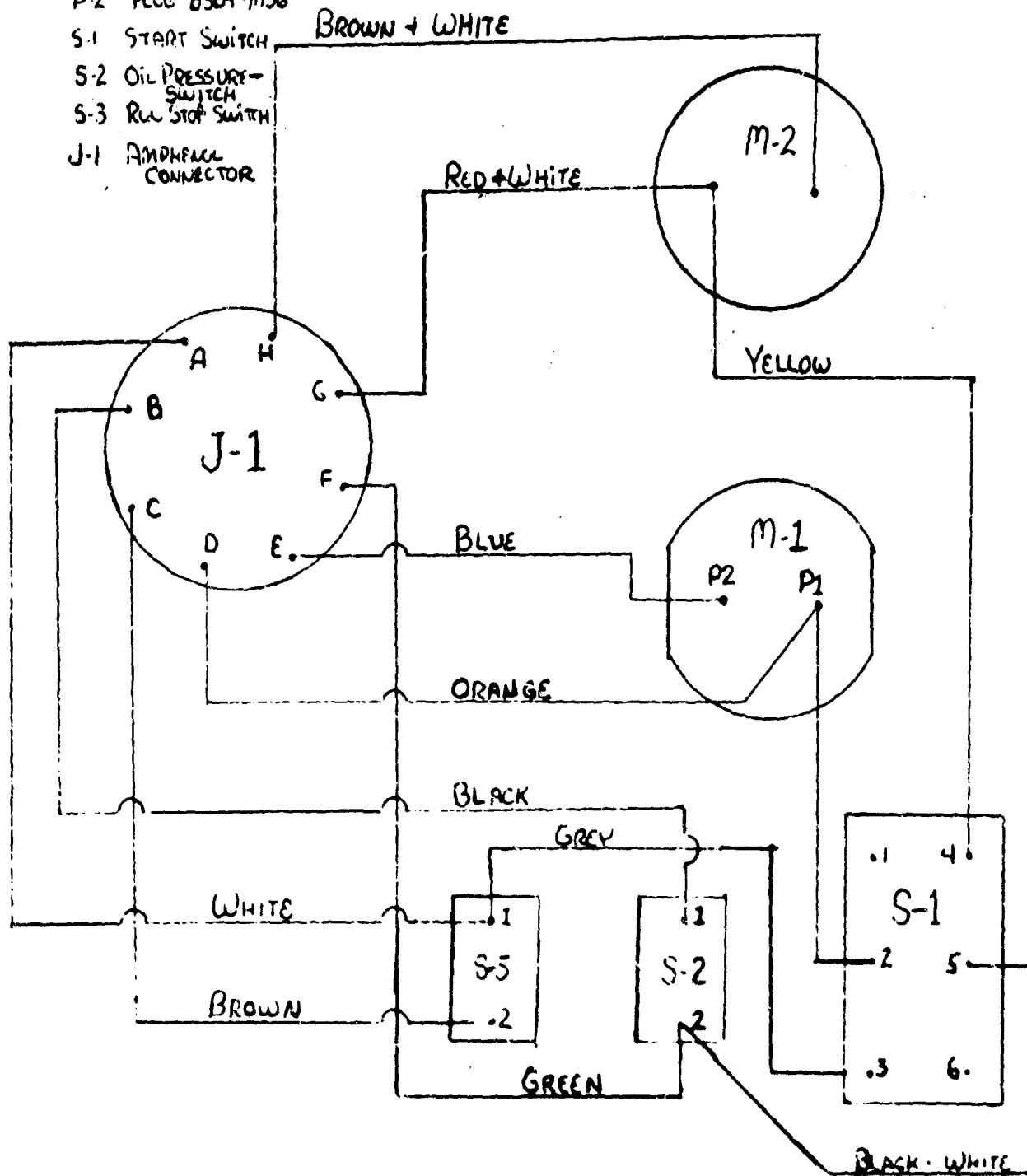
P-2 PLUG 8504-M36

S-1 START SWITCH

S-2 OIL PRESSURE-SWITCH

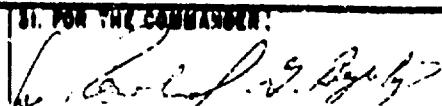
S-3 RUN STOP SWITCH

J-1 AMPHFACE CONNECTOR



## APPENDIX IV

## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEVE-SS-E 3. DATE: 24 January 1969 4. EPR NO. L7-15
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 7. ROTEC PROJ NO. CONTRACT NO.
		8. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM, Water
<b>I. MAJOR ITEM DATA</b>		
9. MODEL 10. QUANTITY 11. MFR.	12. SERIAL NO. 13. LIFE PERIOD 14. UBA NO.	15. N/A
36M-SPS3011G-T 3 E.C. Schleyer Pump Co. Inc.	H-2283 600 hrs N/A	
<b>II. PART DATA</b>		
16. NOMENCLATURE/DESCRIPTION Operation, Maintenance & Overhaul Manual with Parts List		
17. P/N 18. DRAWING NO. 19. QUANTITY 20. STD. GOVT. SSP.	21. MFR. PART NO. 22. MFR. 23. NEXT ASSEMBLY 24. PART TEST LIFE	N/A N/A N/A N/A
<input checked="" type="checkbox"/> 25. MAINTENANCE <input checked="" type="checkbox"/> 26. Manual Review	27. TEST ENVIRONMENT: Maintenance Evaluation	28. INCIDENT CLASS: a. DEFICIENCY b. SHORTCOMING c. MAJOR IMPROVEMENT d. OTHER
		29. ACTION TAKEN: a. REPLACED b. REMOVED c. ADJUSTED d. INSTRUCTED e. REVIEWED
30. DATE AND HOUR OF INCIDENT N/A		<input checked="" type="checkbox"/> 31. MADE See Item 28
<b>III. INCIDENT DESCRIPTION</b>		
32. DESCRIBE INCIDENT FULLY		
<p>a. Attached are recommended additions to the Operation, Maintenance &amp; Overhaul Manual with Parts List for Schleyer 600 GPM Centrifugal Pump, Mod 1, Ser. No. SPS3011 G-T.</p> <p>b. Premature failure of the pump seal (Part No. A004-M65.. EPR) is attributed to insufficient maintenance instructions.</p> <p>c. Adherence to recommended additions to the daily main profile will insure that the seal will be replaced prior to failure. This will prolong the life of the seal, and permit replacement prior to major failure of the seal and additional damage to the interior of the pump.</p> <p>d. Reference EPR L7-10.</p>		
DEFICIENCIES AND SHORTCOMINGS ARE SUBJECT TO RECLASSIFICATION		
33. DEFECTIVE MATERIAL SENT TO: 34. NAME, TITLE & TEL NO. OF PERSONNEL		
JOSEPH T. HARVEY, Equip Spec (Gen), MED ext 1006/4487		35. FOR THE COMMANDER:  ROBERT J. MILLER, Maj., USA, Chief, MED, SSD

Best Available Copy

## APPENDIX IV

RECORD OF COMMENTS ON PUBLICATIONS				For use of this form, see AR 310-3; the proponent agency is Office of the Assistant Chief of Staff for Force Development.	DATE 23 January 1969
SUBJECT Operation, Maintenance & Overhaul Manual with Parts List, Schleyer Model No. 36M-SPS3011G-T, Centrifugal Pump, Gas Eng Driven, USATECOM Project No. 7-8-0961-01				REVISION NOTES FROM	
ITEM NO.	PAGE	PARAGRAPH	LINE *	COMMENT (Exact wording of recommended change must be given.)	
1	7	2-7-A	9	<p><u>Add after "debris": "and abrasive liquids."</u></p> <p><u>Explanation:</u> Disassembly of the test item revealed extensive wear to the internal components indicating a need for additional caution and filterization during surf operations.</p>	
2	7	2-7-A	9	<p><u>Add after "pump": "(Provide a settling bed during surf operations to minimize entrance of sand into the pump)"</u></p> <p><u>Explanation:</u> Same as item 1, above.</p>	
3	13	Fig 3-1	9	<p><u>Add:</u> "Item 9. Remove drain plug (Item 33, Fig 4-1) from the intermediate housing and flush entire pump with fresh water. A daily increase in the amount of drainage from the intermediate housing indicates a defective seal (A004-M36) and the seal must be replaced."</p> <p><u>Explanation:</u> During service testing, sand accumulated in the intermediate housing (EPR L7-11) and caused premature failure of the pump seal, and the intermediate housing assembly. Daily draining and early recognition and replacement of a defective seal will prevent mission stoppage and additional damage.</p>	

\* Reference to line number within the para (apt) or a figure (fig)

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